

United States District Court
EASTERN DISTRICT OF TEXAS
SHERMAN DIVISION

VIRGINIA INNOVATION SCIENCES,
INC.

v.

AMAZON.COM, INC., et al

Civil Action No. 4:18-cv-474
Judge Mazzant

INNOVATION SCIENCES, LLC

v.

RESIDEO TECHNOLOGIES, INC.

Civil Action No. 4:18-cv-475
Judge Mazzant

INNOVATION SCIENCES, INC.

v.

HTC CORPORATION

Civil Action No. 4:18-cv-476
Judge Mazzant

INNOVATION SCIENCES, INC.

v.

VECTOR SECURITY, INC.

Civil Action No. 4:18-cv-477
Judge Mazzant

CLAIM CONSTRUCTION MEMORANDUM OPINION AND ORDER

Before the Court is Plaintiff Innovation Sciences, LLC's ("Plaintiff's" or "VIS's" or "Innovation's")¹ Opening Claim Construction Brief (Dkt. #119),² Defendants Amazon.com, Inc., Amazon Digital Services LLC, Amazon Web Services, Inc. (collectively, "Amazon"), HTC Corporation ("HTC"), Resideo Technologies, Inc. ("Resideo"), and Vector Security, Inc.'s ("Vector's") Responsive Claim Construction Brief (Dkt. #131 & Dkt. #145), Plaintiff's Reply Claim Construction Brief (Dkt. #144), Defendants' Sur-Reply Construction Brief (Dkt. #147-1; *see* Dkt. #166), Plaintiff's Supplemental Claim Construction Brief (Dkt. #186), Defendant Vector's Supplemental Responsive Claim Construction Brief (Dkt. #197), Plaintiff's Reply in Support of its Supplemental Claim Construction Brief (Dkt. #205), and Defendants' Notice of Supplemental Authority Regarding Defendants' Responsive Claim Construction Brief (Dkt. #199). Also before the Court are the parties' May 6, 2019 Joint Claim Construction Statement Pursuant to P.R. 4-3 (Dkt. #111) and the parties' August 19, 2019 Amended Joint Claim Construction Chart Pursuant to P.R. 4-5(d) (Dkt. #200).

The Court held a claim construction hearing on August 28, 2019, to determine the proper construction of the disputed claim terms in United States Patents No. 9,723,443 ("the '443 Patent"), 9,729,918 ("the '918 Patent"), 9,912,983 ("the '983 Patent"), and 9,942,798 ("the '798 Patent") (collectively, the "patents-in-suit").

The Court issues this Claim Construction Memorandum Opinion and Order and hereby incorporates-by-reference the claim construction hearing and transcript as well as the

¹ The Court granted leave to substitute Plaintiff Innovation Sciences, LLC for Plaintiff Virginia Innovation Sciences, Inc. ("VIS"). (*See* Dkt. #161 at pp. 6–8).

² References to docket numbers in the present Claim Construction Memorandum Opinion and Order refer to Civil Action No. 4:18-CV-474 unless otherwise indicated.

demonstrative slides presented by the parties during the hearing. For the following reasons, the Court provides the constructions set forth below.

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BACKGROUND

Plaintiff alleges infringement of United States Patents No. 9,723,443, 9,729,918, 9,912,983, and 9,942,798.

The '443 Patent, titled "System and Method for Providing Locally Applicable Internet Content with Secure Action Requests and Item Condition Alerts," issued on August 1, 2017, and bears an earliest priority date of August 12, 2005. The Abstract of the '443 Patent states:

Optimized delivery of locally applicable Internet content to users. A cache of locally applicable Internet content is maintained in a local content server, based upon a monitoring of locations of users requesting Internet content. Requests for Internet content are received from user equipment through a wireless network base station, and served from the local content server, which is logically proximate to the wireless network base station. The caching of locally applicable Internet content may be maintained on a layered basis. Secure action request receipt and corresponding performance, and item condition alerts are also described.

The '798 Patent, titled "Method and System for Efficient Communication," issued on April 10, 2018, and bears an earliest priority date of August 12, 2005. The Abstract of the '798 Patent states:

Methods and apparatus for efficiently directing communications are disclosed. On [sic] example entails receiving, from a mobile terminal, a communication directed to a cellular communication network, the communication being received in an alternative channel that differs from a channel of the cellular communication network. The communication is then converted for a relayed communication to the cellular communication network on behalf of the mobile terminal, the relayed communication being made through the cellular communication network.

The '918 Patent and the '983 Patent resulted from continuations of the '798 Patent. Defendants submit that the '798 Patent, the '918 Patent, and the '983 Patent share a common specification. (Dkt. #132 at p. 3).

Plaintiff submits: "All four patents are being asserted against the Amazon defendants, the ['918, '983, and '798] patents are being asserted against defendant HTC, while only the first patent ('the '983 patent') is being asserted against defendants Vector Security and Resideo." (Dkt. #119

at p. 1). Defendants submit: “Plaintiff asserts the ’983 patent against all Defendants, the ’798 and ’918 patent against HTC and Amazon, and the ’443 patent only against Amazon.” (Dkt. #131 at p. 3). “For ease of reference, Defendants cite to disclosures in the ’983 patent, which Plaintiff asserts against all Defendants.” (*Id.* at p. 4).

The ’443 Patent resulted from a continuation of United States Patent No. 9,369,844 (“the ’844 Patent”), and United States District Judge Liam O’Grady of the Eastern District of Virginia construed disputed terms in the ’844 Patent in *Virginia Innovation Sciences, Inc. v. Amazon.com, Inc.*, No. 1:16-CV-861, 2017 WL 3599642 (E.D. Va. Aug. 18, 2017) (“*VIS I*” or “*Amazon I*”). On appeal, the findings in *VIS I* were affirmed-in-part and vacated-in-part. *Innovation Sciences, LLC v. Amazon.com, Inc.*, No. 2018-1495, 2019 WL 2762976 (Fed. Cir. July 2, 2019) (“*Innovation Sciences*”). Additional detail regarding litigation involving related patents in the Eastern District of Virginia is set forth in the Court’s July 15, 2019 Memorandum Opinion and Order in the above-captioned case. (*See* Dkt. #161 at pp. 45–48).

LEGAL STANDARDS

Claim construction is a matter of law. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995). The purpose of claim construction is to resolve the meanings and technical scope of claim terms. *U.S. Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir. 1997). When the parties dispute the scope of a claim term, “it is the court’s duty to resolve it.” *O2 Micro Int’l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1362 (Fed. Cir. 2008).

“It is a ‘bedrock principle’ of patent law that ‘the claims of a patent define the invention to which the patentee is entitled the right to exclude.’” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). The Court examines a patent’s intrinsic evidence to define the

patented invention's scope. *Id.* at 1313–14; *Bell Atl. Network Servs., Inc. v. Covad Commc'ns Group, Inc.*, 262 F.3d 1258, 1267 (Fed. Cir. 2001). Intrinsic evidence includes the claims, the rest of the specification, and the prosecution history. *Phillips*, 415 F.3d at 1312–13; *Bell Atl. Network Servs.*, 262 F.3d at 1267. The Court gives claim terms their ordinary and customary meaning as understood by one of ordinary skill in the art at the time of the invention. *Phillips*, 415 F.3d at 1312–13; *Alloc, Inc. v. Int'l Trade Comm'n*, 342 F.3d 1361, 1368 (Fed. Cir. 2003).

Claim language guides the Court's construction of claim terms. *Phillips*, 415 F.3d at 1314. “[T]he context in which a term is used in the asserted claim can be highly instructive.” *Id.* Other claims, asserted and unasserted, can provide additional instruction because “terms are normally used consistently throughout the patent.” *Id.* Differences among claims, such as additional limitations in dependent claims, can provide further guidance. *Id.*

“[C]laims ‘must be read in view of the specification, of which they are a part.’” *Id.* at 1315 (quoting *Markman*, 52 F.3d at 979). “[T]he specification ‘is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.’” *Id.* (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)); *Teleflex, Inc. v. Ficoso N. Am. Corp.*, 299 F.3d 1313, 1325 (Fed. Cir. 2002). In the specification, a patentee may define his own terms, give a claim term a different meaning than it would otherwise possess, or disclaim or disavow some claim scope. *Phillips*, 415 F.3d at 1316. Although the Court generally presumes terms possess their ordinary meaning, this presumption can be overcome by statements of clear disclaimer. *See SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc.*, 242 F.3d 1337, 1343–44 (Fed. Cir. 2001). This presumption does not arise when the patentee acts as his own lexicographer. *See Irdeto Access, Inc. v. EchoStar Satellite Corp.*, 383 F.3d 1295, 1301 (Fed. Cir. 2004).

The specification may also resolve ambiguous claim terms “where the ordinary and accustomed meaning of the words used in the claims lack sufficient clarity to permit the scope of the claim to be ascertained from the words alone.” *Teleflex*, 299 F.3d at 1325. For example, “[a] claim interpretation that excludes a preferred embodiment from the scope of the claim ‘is rarely, if ever, correct.’” *Globetrotter Software, Inc. v. Elan Computer Group Inc.*, 362 F.3d 1367, 1381 (Fed. Cir. 2004) (quoting *Vitronics*, 90 F.3d at 1583). But, “[a]lthough the specification may aid the court in interpreting the meaning of disputed language in the claims, particular embodiments and examples appearing in the specification will not generally be read into the claims.” *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 1571 (Fed. Cir. 1988); *accord Phillips*, 415 F.3d at 1323.

The prosecution history is another tool to supply the proper context for claim construction because a patentee may define a term during prosecution of the patent. *Home Diagnostics Inc. v. LifeScan, Inc.*, 381 F.3d 1352, 1356 (Fed. Cir. 2004) (“As in the case of the specification, a patent applicant may define a term in prosecuting a patent.”). The well-established doctrine of prosecution disclaimer “preclud[es] patentees from recapturing through claim interpretation specific meanings disclaimed during prosecution.” *Omega Eng’g Inc. v. Raytek Corp.*, 334 F.3d 1314, 1323 (Fed. Cir. 2003). “Indeed, by distinguishing the claimed invention over the prior art, an applicant is indicating what the claims do not cover.” *Spectrum Int’l v. Sterilite Corp.*, 164 F.3d 1372, 1378–79 (Fed. Cir. 1988) (quotation omitted). “As a basic principle of claim interpretation, prosecution disclaimer promotes the public notice function of the intrinsic evidence and protects the public’s reliance on definitive statements made during prosecution.” *Omega Eng’g*, 334 F.3d at 1324. However, the prosecution history must show that the patentee clearly and unambiguously disclaimed or disavowed the proposed interpretation during prosecution to obtain claim allowance.

Middleton Inc. v. 3M Co., 311 F.3d 1384, 1388 (Fed. Cir. 2002). Statements will constitute disclaimer of scope only if they are “clear and unmistakable statements of disavowal.” *See Cordis Corp. v. Medtronic AVE, Inc.*, 339 F.3d 1352, 1358 (Fed. Cir. 2003). An “ambiguous disavowal” will not suffice. *Schindler Elevator Corp. v. Otis Elevator Co.*, 593 F.3d 1275, 1285 (Fed. Cir. 2010) (citation omitted).

Although “less significant than the intrinsic record in determining the legally operative meaning of claim language,” the Court may rely on extrinsic evidence to “shed useful light on the relevant art.” *Phillips*, 415 F.3d at 1317 (quotation omitted). Technical dictionaries and treatises may help the Court understand the underlying technology and the manner in which one skilled in the art might use claim terms, but such sources may also provide overly broad definitions or may not be indicative of how terms are used in the patent. *Id.* at 1318. Similarly, expert testimony may aid the Court in determining the particular meaning of a term in the pertinent field, but “conclusory, unsupported assertions by experts as to the definition of a claim term are not useful.” *Id.* Generally, extrinsic evidence is “less reliable than the patent and its prosecution history in determining how to read claim terms.” *Id.*

The Supreme Court of the United States has “read [35 U.S.C.] § 112, ¶ 2 to require that a patent’s claims, viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the invention with reasonable certainty.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2129 (2014). “A determination of claim indefiniteness is a legal conclusion that is drawn from the court’s performance of its duty as the construer of patent claims.” *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1347 (Fed. Cir. 2005) (citations and internal quotation marks omitted), *abrogated on other grounds by Nautilus*, 134

S. Ct. 2120. “Indefiniteness must be proven by clear and convincing evidence.” *Sonix Tech. Co. v. Publ’ns Int’l, Ltd.*, 844 F.3d 1370, 1377 (Fed. Cir. 2017).

ANALYSIS

Agreed Claim Terms

In their May 6, 2019 Joint Claim Construction Statement Pursuant to P.R. 4-3, the parties submit that “[t]he parties have not agreed to any constructions,” but “the parties have met and conferred as required by P.R. 4-2(c) and have reduced the number of terms for which they seek construction in an effort to streamline the claim construction proceedings.” (Dkt. #111 at p. 2).

Disputed Claim Terms

A. “wireless HUB system,” “wireless hub,” “centralized HUB system,” and “centralized hub system”

“wireless HUB system”	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“one or more devices capable of wireless communication for communicating with user devices, sensors, or appliances”	Indefinite and lack of written description under 35 U.S.C. § 112
“wireless hub”	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“a device capable of wireless communication for communicating with user devices, sensors, or appliances”	Indefinite and lack of written description under 35 U.S.C. § 112

<p style="text-align: center;">“centralized HUB system” “centralized hub system”</p>	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“one or more devices at a central location capable of wireless communication for communicating with user devices, sensors, or appliances”	Indefinite and lack of written description under 35 U.S.C. § 112

(Dkt. #111, Ex. 1, at pp. 2–3; Dkt. #119, Ex. 5 at pp. 2–3). Defendants submit that the term “centralized hub system” appears in Claims 1, 2, and 81 of the ’798 Patent, the term “centralized HUB system” appears in Claim 139 of the ’983 Patent, the term “wireless HUB system” appears in Claims 22, 24, 62, and 117 of the ’983 Patent, and the term “wireless hub” appears in Claims 116, 128, and 135 of the ’918 Patent. (Dkt. #131 at p. 15; *see* Dkt. #111, Ex. 1 at pp. 2–3). Larger “hub” and “system” terms presented by the parties are addressed in Sections A-1, A-2, and A-3, below.

1. The Parties’ Positions

Plaintiff argues that “the term ‘hub’ refers to a well-known class of devices.” (Dkt. #119 at p. 12).

Defendants respond that “[w]hile the terms ‘wireless,’ ‘centralized,’ and ‘hub’ may individually have some meaning to one of ordinary skill in the art, the combination of those terms does not connote a structure and certainly not one sufficient to perform all the various functions claimed.” (Dkt. #131 at p. 16). Defendants also argue that “while the generic computing term ‘hub’ may have some meaning in the art, the terms ‘wireless HUB’ and ‘centralized HUB’ (with ‘HUB’ in all caps) are coined terms unique to the asserted patents.” (*Id.* at pp. 16–17). Further, Defendants argue: “[T]he patent claims the *result* of converting any received signal in any format

from any network existing or to be developed and extracting from it information content of any type encoded in any manner, thus claiming far more than the patentees invented. Section 112, ¶ 6 exists precisely to provide limits on such vacuous and functional claims. *See, e.g., Halliburton Energy Servs., Inc. [v. M-I LLC]*, 514 F.3d [1244,] 1255 [(Fed. Cir. 2008)].” (Dkt. #131 at p. 18).

Plaintiff replies that “[b]ecause Defendants did not raise the issue of definiteness apart from the means-plus-function analysis, Defendants have waived their original contention that these terms were indefinite.” (Dkt. #144 at p. 19).

In sur-reply, Defendants argue that, to avoid means-plus-function treatment under 35 U.S.C. § 112, ¶ 6, a claim must “recite not just generic structure but structure for performing the recited function entirely.” (Dkt. #147-1 at p. 2).

2. Analysis

Claims 22 and 139 of the '983 Patent, for example, recite (emphasis added):

22. A *wireless HUB system* for managing information communications comprising:

- an input interface configured to receive a wireless signal through a wireless communication network;

- a decoder; and

- a network interface configured to provide a communication through a network communication channel,

- wherein the *wireless HUB system is configured to perform a conversion of the wireless signal to accommodate production of a corresponding information content, the wireless signal comprising a compressed signal, the conversion comprising decompressing the compressed signal;*

- wherein the decoder is configured to decompress the compressed signal;

- wherein the *wireless HUB system is further configured to communicate, through the network communication channel, information for managing an item status of an item in connection with a short range wireless communication regarding an updated status of the item; and*

- wherein the network communication channel is separate from a wireless channel for the short range wireless communication.

* * *

139. A *centralized HUB system* for managing information communications for a high definition digital display comprising:

a transceiver;

a decoder;

an encoder; and

a high definition digital output interface, wherein the transceiver is configured to communicate a data package comprising an identifier corresponding to a communication of an information content for production on the high definition digital display;

wherein the *centralized HUB system* is configured to perform a conversion of a multimedia signal corresponding to the information content to accommodate the production of the information content on the high definition digital display, the multimedia signal comprising a compressed signal;

wherein the compressed signal is a compressed high definition digital video signal;

wherein the decoder is configured to decompress the compressed signal to a decompressed signal;

wherein the encoder is configured to encode the decompressed signal to an encoded signal, the encoded signal comprising an encoded decompressed high definition digital video signal; and

wherein the high definition digital output interface is configured to transmit the encoded signal to accommodate the production of the information content on the high definition digital display; and

wherein the conversion of the multimedia signal comprises decompressing by the decoder, the compressed signal to the decompressed signal, further followed by encoding, by the encoder, the decompressed signal produced by the decoder to produce the encoded signal for transmission through the high definition digital output interface.

Title 35 U.S.C. § 112(f) (formerly § 112, ¶ 6) provides: “An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.” “In exchange for using this form of claiming, the patent specification must disclose with sufficient particularity the corresponding structure for performing the claimed function and clearly link that structure to the function.” *Triton Tech of Tex., LLC v. Nintendo of Am., Inc.*, 753 F.3d 1375, 1378 (Fed. Cir. 2014).

“[T]he failure to use the word ‘means’ . . . creates a rebuttable presumption . . . that § 112, para. 6 does not apply.” *Williamson v. Citrix Online LLC*, 792 F.3d 1339, 1348 (Fed. Cir. 2015) (citations and internal quotation marks omitted). “When a claim term lacks the word ‘means,’ the presumption can be overcome and § 112, para. 6 will apply if the challenger demonstrates that the claim term fails to recite sufficiently definite structure or else recites function without reciting sufficient structure for performing that function.” *Id.* at 1349 (citations and internal quotation marks omitted).

Williamson, in an *en banc* portion of the decision, abrogated prior statements that the absence of the word “means” gives rise to a “strong” presumption against means-plus-function treatment. *Id.* (citation omitted). *Williamson* also abrogated prior statements that this presumption “is not readily overcome” and that this presumption cannot be overcome “without a showing that the limitation essentially is devoid of anything that can be construed as structure.” *Id.* (citations omitted). Instead, *Williamson* found, “[h]enceforth, we will apply the presumption as we have done prior to *Lighting World*” *Id.* (citing *Lighting World, Inc. v. Birchwood Lighting, Inc.*, 382 F.3d 1354, 1358 (Fed. Cir. 2004)). In a subsequent part of the decision not considered *en banc*, *Williamson* affirmed the district court’s finding that the term “distributed learning control module” was a means-plus-function term that was indefinite because of lack of corresponding structure, and in doing so *Williamson* stated that “‘module’ is a well-known nonce word.” 792 F.3d at 1350.

Here, Defendants have not shown that “hub” is a “nonce” term under *Williamson*, and Defendants submit no persuasive evidence that the term “hub” fails to connote structure in the relevant art. *See* 792 F.3d at 1350. Nothing in the specification suggests that “hub” lacks structure. *See* ’983 Patent at 14:66–15:8 (“the WHUB 804 [(wireless HUB)] may keep a database of

household requirements and inventories”); *see also id.* at 24:18–28 (“centralized HUB system”) & 25:17–24.

Plaintiff submits a technical dictionary definition of “hub,” thereby demonstrating that the term “hub” refers to a known class of structures in the art of computer networking. (*See* Dkt. #119, Ex. 6, *Microsoft Computer Dictionary* 260 (5th ed. 2002) (“In a network, a device joining communication lines at a central location, providing a common connection to all devices on the network. The term is an analogy to the hub of a wheel.”). The opinions of Defendants’ expert are not to the contrary. For example, Defendants’ expert opines:

This term, although made up of certain words that alone have a meaning to those of skill in the art, does not have a computer science meaning as recited in the claims of the ’983 patent. In particular, although a “hub” is, in general, a term familiar to those of skill in computer networking, such a hub is not known to perform the function recited in this claim term; and it is also apparent from the specification’s consistent use of “HUB” in all capital letters that some other (undefined) meaning of “HUB” was intended here.

(Dkt. #119, Ex. 13, May 6, 2019 Johnson Decl. at ¶ 43) (emphasis added).

Defendants fail to support their contention that the known structure must be known to function in the specific manner set forth in the claims. *See Apex Inc. v. Raritan Computer, Inc.*, 325 F.3d 1364, 1373 (Fed. Cir. 2003) (finding that “circuit” connoted structure); *see also Chrimar Holding Co., LLC v. ALE USA Inc.*, 732 F. App’x 876, 884–85 (Fed. Cir. June 1, 2018) (as to “central piece of equipment,” “Ethernet terminal equipment,” “BaseT Ethernet terminal equipment,” and “end device,” stating that “[a] claim term that has an understood meaning in the art as reciting structure is not a nonce word triggering § 112, ¶ 6”); *Skky, Inc. v. MindGeek, s.a.r.l.*, 859 F.3d 1014, 1119 (Fed. Cir. 2017) (finding “wireless device means” to not be a means-plus-function term, noting that “it is sufficient if the claim term is used in common parlance or by persons of skill in the pertinent art to designate structure, even if the term covers a broad class of

structures and even if the term identifies the structures by their function”) (quoting *TecSec, Inc. v. Int’l Bus. Machs. Corp.*, 731 F.3d 1336, 1347 (Fed. Cir. 2013)); *Zeroclick, LLC v. Apple Inc.*, 891 F.3d 1003, 1008 (Fed. Cir. 2018) (finding that “user interface code” and “program” were not nonce words; noting that “the mere fact that the disputed limitations incorporate functional language does not automatically convert the words into means for performing such functions”).

This finding is consistent with principles articulated by the Federal Circuit prior to the abrogated *Lighting World* decision. See *Greenberg v. Ethicon Endo-Surgery, Inc.*, 91 F.3d 1580, 1583 (Fed. Cir. 1996) (finding that “detent mechanism” was not a means-plus-function term because “‘detent’ denotes a type of device with a generally understood meaning in the mechanical arts, even though the definitions are expressed in functional terms”; “It is true that the term ‘detent’ does not call to mind a single well-defined structure, but the same could be said of other commonplace structural terms such as ‘clamp’ or ‘container.’ What is important is not simply that a ‘detent’ or ‘detent mechanism’ is defined in terms of what it does, but that the term, as the name for structure, has a reasonably well understood meaning in the art.”).

Defendants’ argument resembles an argument as to whether the patents disclose sufficient corresponding structure, but this is a distinct inquiry that arises only if 35 U.S.C. § 112, ¶ 6 is found to apply. Defendants’ Notice of Supplemental Authority Regarding Defendants’ Responsive Claim Construction Brief (Dkt. #199) cites *MTD Products Inc. v. Iancu*, No. 2017-2292, --- F.3d ---, 2019 WL 3770828 (Fed. Cir. Aug. 12, 2019). In *MTD*, the Federal Circuit found “mechanical control assembly . . . configured to . . .” to be “similar to other generic, black-box words that this court has held to be nonce terms similar to ‘means’ and subject to § 112, ¶ 6,” and the court vacated a finding that 35 U.S.C. § 112, ¶ 6 did not apply. *Id.*, at *5. In the present case, by contrast, Defendants’ expert acknowledges that a “hub” is a known structure. (Dkt. #119,

Ex. 13, May 6, 2019 Johnson Decl. at ¶ 43) (quoted above). Moreover, the analysis in *MTD* further undercuts Defendants’ argument that the structure must be known to function in the specific manner claimed:

Interpretation of an asserted means-plus-function limitation involves two steps. First, we determine if the claim limitation is drafted in means-plus-function format. As part of this step, we consider whether the claim limitation connotes “sufficiently definite structure” to a person of ordinary skill in the art. If we conclude that the limitation is in means-plus-function format, *the second step requires us to review the specification to identify the structure that performs the claimed function(s) and thus “corresponds to” the claimed means. While related, these two inquiries are distinct.*

MTD, 2019 WL 3770828, at *6 (emphasis added).

At the August 28, 2019 hearing, Defendants emphasized the statement in *MTD* that “[i]n assessing whether the claim limitation is in means-plus-function format, we do not merely consider the introductory phrase (e.g., ‘mechanical control assembly’) in isolation, but look to the entire passage including functions performed by the introductory phrase.” *Id.*, at *4. Immediately following this sentence, *MTD* cited *Apex* generally (without a pin cite). 325 F.3d 1364. At the August 28, 2019 hearing, Defendants cited the statement in *Apex* that: “The threshold issue for all the limitations involving the term ‘circuit’ is whether the term itself connotes sufficient structure to one of ordinary skill in the art to perform the functions identified by each limitation.” *Id.* at 1373. Ironically, *Apex* held that “first interface circuit” and “second interface circuit” were not means-plus-function terms, finding that “it is clear that the term ‘circuit,’ by itself connotes some structure” and, as to “interface circuit,” “the ordinary meaning of this term connotes specific structures to one of ordinary skill in the art.” *Id.* at 1373–74; *see id.* at 1375 (noting that, on remand, challenger must “prove by a preponderance of the evidence that the limitations, as a whole, do not connote sufficiently definite structure to one of ordinary skill in the art”). Again, in the present case, Defendants fail to show that the “hub” structures known in the art must be known

as performing all of the specific functions set forth in the claims at issue. *MTD*, *Apex*, and other similar authorities cited by Defendants do not compel otherwise.

Further, Defendants have not shown that instances of capitalization of “HUB” demonstrate that the inventor coined a new term. *See, e.g., CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002) (“the claim term will not receive its ordinary meaning if the patentee acted as his own lexicographer and *clearly* set forth a definition of the disputed claim term in either the specification or prosecution history”) (emphasis added).

The term “hub” is not analogous to the term “cheque standby unit” that failed to connote sufficiently definite structure in *Diebold Nixdorf, Inc. v. International Trade Commission*, 899 F.3d 1291, 1298 (Fed. Cir. 2018), cited by Defendants. In particular, *Diebold* found that “the claims do not recite *any* structure, much less ‘sufficiently definite structure,’ for the ‘cheque standby unit.’” *Id.* In the present case, by contrast, Defendants’ expert acknowledges that a “hub” is a known structure. (Dkt. #119, Ex. 13, May 6, 2019 Johnson Decl. at ¶ 43) (quoted above). Defendants’ reliance on *Advanced Ground Information Systems, Inc. v. Life360, Inc.* is similarly unavailing. 830 F.3d 1341, 1348 (Fed. Cir. 2016) (as to “symbol generator,” stating that “[i]rrespective of whether the terms ‘symbol’ and ‘generator’ are terms of art in computer science, the *combination* of the terms as used in the context of the relevant claim language suggests that it is simply an abstraction that describes the function being performed (i.e., the generation of symbols)”).

Defendants’ reliance on the *Danco* case is also unpersuasive. *See Danco Inc. v. Fluidmaster, Inc.*, No. 5:16-CV-73, 2017 WL 4225217, at *7 (E.D. Tex. Sept. 22, 2017). In particular, Defendants cite *Danco* as purported support for Defendants’ argument that “even if these terms did connote some generic structure, they do not connote sufficient structure to ‘perform

entirely’ the recited functions, which they must to avoid the requirements of § 112, ¶ 6.” (Dkt. #131 at p. 17). Yet, *Danco* quoted the “perform entirely” language from authority regarding when a term that *expressly uses* the word “means” is *not* governed by 35 U.S.C. § 112, ¶ 6. *See Personalized Media Commc’ns, LLC v. Int’l Trade Comm’n*, 161 F.3d 696, 704 (Fed. Cir. 1998) (“‘[W]here a claim recites a function, but then goes on to elaborate sufficient structure, material, or acts within the claim itself to perform entirely the recited function, the claim is not in means-plus-function format’ even if the claim uses the term ‘means.’”) (quoting *Sage Prods. v. Devon Indus., Inc.*, 126 F.3d 1420, 1427–28 (Fed. Cir. 1997)). *Danco* is therefore not analogous to the present case, in which the terms at issue do *not* use the word “means.”

The Court concludes that Defendants fail to rebut the presumption against means-plus-function treatment. Defendants present no alternative proposed constructions. No further construction is necessary.

Defendants have also presented an indefiniteness argument under *Nautilus*:

Moreover, because the patents define these terms solely by reference to their function, but provide no limiting solution for performing the claimed functions, they are also indefinite under § 112, ¶ 2. *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 910 (2014) (claims that do not “inform those skilled in the art about the scope of the invention with reasonable certainty” are indefinite under § 112); (Johnson Decl. ¶ 617).

(Dkt. #131 at p. 22). Defendants have not adequately supported their argument or otherwise persuasively shown that the claim terms at issue lack reasonable certainty under *Nautilus*. (*See id.*; *see also* Dkt. #119, Ex. 13, May 6, 2019 Johnson Decl. at ¶ 617).

The Court therefore hereby construes **“wireless HUB system,” “wireless hub,” “centralized HUB system,”** and **“centralized hub system”** to have their **plain meaning**.

A-1. Additional “hub” Terms

Additional “hub” terms identified by the parties are subject to the same analysis as set forth above regarding the terms “wireless HUB system,” “wireless hub,” “centralized HUB system,” and “centralized hub system.” These terms include (*see* Dkt. #119 at pp. 21–22 & 39–40; *see also* Dkt. #200, Ex. E at pp. 2–9; *id.*, Ex. F at pp. 1–5; *id.*, Ex. G at pp. 1–2)³:

D55. “wherein the wireless hub is configured to send a data package to the management center system through a wireless communication network based on the request for the particular information content, the data package including information for the unique hub identifier” (’918 Patent, Claims 33, 116, 128, 135);

D81. “wherein the wireless hub is configured to receive the particular information content through the wireless communication network in connection with identification of the wireless hub” (’918 Patent, Claims 116, 128, 135);

D82. “wherein the wireless hub is configured to perform a conversion of a corresponding signal of the particular information content to accommodate production of the particular information content” (’918 Patent, Claims 33, 116, 128, 135);

D84. “wherein the wireless hub is configured to receive the particular information content through the wireless communication network in connection with identification, by the management center system, of the wireless hub” (’918 Patent, Claim 33);

D86. “centralized hub system configured to: receive, through a wireless communication network, an information content requested by a user in connection with identification of the centralized hub system based on recognition of the unique hub identifier, the information content carried by a compressed digital video signal” (’798 Patent, Claim 1);

D87. “wherein the centralized hub system is further configured to communicate the information through the WLAN for said managing the household item status” (’798 Patent, Claim 2);

D20. “wherein the wireless HUB system is configured to perform a conversion of the wireless signal to accommodate production of a corresponding information content” (’983 Patent, Claims 22, 62);

³ The alphanumeric labels preceding each term refer to such labels that appear in Plaintiff’s list of Agreed and Disputed Constructions attached to its Opening Claim Construction Brief. (Dkt. #119 at Ex. 5).

D21. “wherein the wireless HUB system is further configured to communicate, through the network communication channel, information for managing an item status of an item in connection with a short range wireless communication regarding an updated status of the item” (’983 Patent, Claim 22);

D25. “wherein the wireless HUB system is configured to notify a user about the updated status according to a configuration setting” (’983 Patent, Claim 24);

D42. “wherein the wireless HUB system is configured to receive a signal from the item status sensing device” (’983 Patent, Claim 117);

D43. “wherein the wireless HUB system is further configured to identify the item in connection with recognition of the information corresponding to the unique identifier” (’983 Patent, Claim 117);

D44. “wherein the wireless HUB system is further configured to communicate, through the network communication channel, information about the updated status to a user device associated with the item” (’983 Patent, Claim 117);

D45. “wherein the wireless HUB system is configured to notify a user of the updated status according to a configuration setting” (’983 Patent, Claim 117); and

D50. “wherein the centralized HUB system is configured to perform a conversion of a multimedia signal corresponding to the information content to accommodate the production of the information content on the high definition digital display, the multimedia signal comprising a compressed signal” (’983 Patent, Claim 139).⁴

The Court therefore likewise hereby construes these terms to have their **plain meaning**.

A-2. Related “system” Terms

Certain “system” terms identified by the parties refer back to terms such as “wireless HUB system,” “centralized HUB system,” and “centralized hub system” and are subject to the same

⁴ The parties’ August 9, 2019 Joint Claim Construction Chart Pursuant to P.R. 4-5(d) also includes the following terms in Claim 81 of the ’798 Patent: “wherein the centralized hub system is further configured to transmit the encoded decompressed digital video signal to the high definition digital television through a predetermined communication channel in conjunction with a navigational command for the predetermined communication channel, the predetermined communication channel being the high definition digital output interface connected to the cable”; and “wherein the centralized hub system is further configured to communicate information for managing an item status of an item based on a signal regarding an update [*sic*, updated] status of the item, the signal being triggered by a detection of the updated status.” (Dkt. #200, Ex. G at pp. 4–6).

analysis as set forth above. These terms include (*see* Dkt. #119 at pp. 45–46; *see also* Dkt. #200, Ex. F at pp. 16–17) (emphasis added):

D56. “wherein, in connection with recognition, by the system, of information for the unique identifier for the household item associated with the short range wireless communication, *the system* is configured to update the household item status information for the household item corresponding to the updated status of the household item” (’918 Patent, Claim 33); and

D66. “wherein *the system* further comprises a signal conversion unit configured to receive the multimedia information content and convert a corresponding signal of the multimedia information content to accommodate the production of the multimedia information content by the digital television” (’918 Patent, Claim 128).

The Court therefore likewise hereby construes these terms to have their **plain meaning**.

A-3. Supplemental “hub” Terms

In supplemental briefing, the parties addressed certain supplemental “hub” terms. The parties present the same arguments for these supplemental “hub” terms as set forth above regarding the terms “wireless HUB system,” “wireless hub,” “centralized HUB system,” and “centralized hub system.” (*See* Dkt. #186 at pp. 2–7; *see also* Dkt. #197 at pp. 3–4; Dkt. #205 at pp. 1–2).⁵ The same analysis thus applies. These terms are (Dkt. #186 at p. 1; *see* Dkt. #111, Ex. 1 at pp. 9–10 & 11–12; *see also* Dkt. #200, Ex. E at pp. 13–15):

D24. “wherein the wireless HUB system is further configured to communicate a video from a video camera to a user’s terminal at least in part through a cellular network” (’983 Patent, Claim 25); and

D26. “wherein the wireless HUB system is configured to communicate information designated for a user of the wireless HUB system through a cellular network” (’983 Patent, Claim 45).

⁵ Plaintiff’s supplemental brief attaches an August 7, 2019 Supplemental Declaration of Joseph C. McAlexander, III. (Dkt. #186, Ex. 25). In its supplemental response, Defendant Vector argues that the declaration is untimely under the Court’s Local Patent Rules, and “the Court should give no weight to this ambush evidence.” (Dkt. #197 at p. 3). No party has moved to strike the declaration. The Court need not resolve the parties’ disputes as to weight and timeliness because the August 7, 2019 Supplemental Declaration of Joseph C. McAlexander, III has not significantly affected the Court’s claim construction analysis.

The Court therefore likewise hereby construes these terms to have their **plain meaning**.

B. “central controller” Terms

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
Not governed by 35 U.S.C. § 112, ¶ 6	Governed by 35 U.S.C. § 112, ¶ 6

(*See* Dkt. #119, Ex. 5 at pp. 28–31). The parties have submitted the following “central controller”

terms (*see* Dkt. #119 at p. 32; *see also* Dkt. #200, Ex. H at pp. 2–7):

D114. “wherein the central controller is configured to receive information regarding the item status signal and identify the item in connection with a successful transmission of the item status signal from the wireless transmitter” (’443 Patent, Claim 1);

D115. “wherein the central controller is further configured to identify the item is based on recognition of the unique identifier of the item stored in the memory” (’443 Patent, Claim 1);

D116. “wherein the central controller is further configured to perform a processing of a purchase request for the item to increase the household inventory of the item in connection with identification of the item” (’443 Patent, Claim 1);

D117. “wherein the central controller is further configured to communicate information for the processing of the purchase request through a network communication channel to complete the processing of the purchase request, the network communication channel being separate from the wireless transmission channel established for the transmission of the item status signal” (’443 Patent, Claim 1); and

D118. “wherein the central controller is configured to send confirmation information regarding the processing of the purchase request” (’443 Patent, Claim 1).

1. The Parties’ Positions

Plaintiff argues that “[t]he claimed ‘controller’ and the related term ‘microcontroller’ are part of a well-known class of structures,” and “[t]he claims themselves recite additional structural interconnectivity with other elements of the claims.” (Dkt. #119 at pp. 32 & 33). Further, Plaintiff

argues that “[t]he specification also describes the structural interconnection that examples of the central controller may have in the disclosed embodiments.” (*Id.* at p. 33).

Defendants respond that “[w]hile the terms ‘central’ and ‘controller’ may individually have some meaning, the combination of those terms does not connote a structure sufficient to perform the claimed functions.” (Dkt. #131 at p. 23).

Plaintiff replies that technical dictionaries confirm that “those of skill in the art understand that the term ‘controller’ refers to known structures.” (Dkt. #144 at p. 11; *see id.* at pp. 10–11).

2. Analysis

Claim 1 of the ’443 Patent recites (emphasis added):

1. A system for facilitating electronic communications, the system comprising:

a *central controller*;

a memory; and

a wireless transmitter configured to transmit, through a wireless transmission channel, an item status signal in connection with an initiation of an increase of a household inventory of an item, the wireless transmission channel being established for transmission of the item status signal in a local wireless communication network in response to an indication of an updated status of the item;

wherein the memory is configured to store a unique identifier for the item and information related with the household inventory of the item, the information related with the household inventory of the item including a purchase requirement of the item;

wherein the wireless transmitter is designated to transmit the item status signal;

wherein the *central controller* is configured to receive information regarding the item status signal and identify the item in connection with a successful transmission of the item status signal from the wireless transmitter;

wherein the wireless transmitter is associated with the item;

wherein the information regarding the item status signal comprises information for the unique identifier for the item;

wherein the *central controller* is further configured to identify the item is based on recognition of the unique identifier of the item stored in the memory;

wherein the *central controller* is further configured to perform a processing of a purchase request for the item to increase the household inventory of the item in connection with identification of the item;

wherein the *central controller* is further configured to communicate information for the processing of the purchase request through a network

communication channel to complete the processing of the purchase request, the network communication channel being separate from the wireless transmission channel established for the transmission of the item status signal;

wherein the information for the processing of the purchase request comprises a shipping payment information for the purchase request address for the item; and

wherein the *central controller* is configured to send confirmation information regarding the processing of the purchase request.

Legal principles regarding 35 U.S.C. § 112, ¶ 6 are set forth above as to the “hub” terms. Here, Defendants have not shown that “controller” (or “central controller”) is a “nonce” term under *Williamson*, and Defendants submit no persuasive evidence that the term “central controller” fails to connote structure in the relevant art. *See* 792 F.3d at 1350. Nothing in the specification suggests that “central controller” lacks structure. *See* ’443 Patent at 4:43–51 (describing “Radio Network Controller” as a “conventional element[] of a cellular network”).

Plaintiff submits technical dictionary definitions of “controller,” thereby reinforcing that the term “controller” refers to a known class of structures in the art. (*See* Dkt. #144, Ex. 18, *The IEEE Standard Dictionary of Electrical and Electronics Terms* 217 (6th ed. 1996) (“The component of a system that functions as the system controller. A controller typically sends program messages to and receives response messages from devices.”); *see also id.*, Ex. 19, *IBM Dictionary of Computing* 145 (10th ed. 1993) (“A device that coordinates and controls the operation of one or more input/output devices, such as workstations, and synchronizes the operation of such devices with the operation of the system as a whole.”)).⁶

⁶ Also of note, Plaintiff submits a definition of “microcontroller” as: “A special-purpose, single-chip computer designed and built to handle a particular, narrowly defined task.” (Dkt. #119, Ex. 6, *Microsoft Computer Dictionary* 337 (5th ed. 2002)).

Defendants' expert opines: "This term, although made up of certain words that alone have a meaning to those of skill in the art, does not have a computer science meaning as recited in the claims of the '443 patent." (Dkt. #119, Ex. 13, May 6, 2019 Johnson Decl. at ¶ 524).

Defendants fail to show, however, how the modifier "central" purportedly renders the well-known meaning of controller inapplicable. The opinion of Defendants' expert is therefore unpersuasive. Defendants' reliance on *Advanced Ground Information Systems, Inc. v. Life360, Inc.* is similarly unavailing. See 830 F.3d at 1348 (as to "symbol generator," stating that "[i]rrespective of whether the terms 'symbol' and 'generator' are terms of art in computer science, the *combination* of the terms as used in the context of the relevant claim language suggests that it is simply an abstraction that describes the function being performed (i.e., the generation of symbols)"). These findings are consistent with principles articulated by the Federal Circuit prior to the abrogated *Lighting World* decision. See *Greenberg*, 91 F.3d at 1583 (quoted above).

The Court therefore concludes that Defendants fail to rebut the presumption against means-plus-function treatment. Defendants present no alternative proposed constructions. No further construction is necessary.

Defendants cite *St. Isidore Research, LLC v. Comerica Inc., et al.*, in which the Court found that "how the 'processor configured to . . .' terms operate with the other claimed components is not sufficiently recited or described." No. 2:15-CV-1390, 2016 WL 4988246, at *14 (E.D. Tex. Feb. 9, 2017). In the present case, the claim language describes how the controller "interact[s] . . . with other limitations in the claim to achieve [its] objectives." *Id.* In particular, "the central controller is configured to receive information regarding the item status signal and identify the item in connection with a successful transmission of the item status signal from the wireless transmitter," "identify the item . . . based on recognition of the unique identifier of the item stored

in the memory,” “perform a processing of a purchase request for the item to increase the household inventory of the item in connection with identification of the item,” “communicate information for the processing of the purchase request through a network communication channel to complete the processing of the purchase request,” and “send confirmation information regarding the processing of the purchase request.” On balance, *St. Isidore* is not persuasive here. Also, Defendants’ reliance on *Danco* is unpersuasive for the same reasons set forth regarding the above-discussed “hub” terms. *See Danco*, 2017 WL 4225217, at *7.

Defendants further argue that the claim fails to set forth sufficient structure because “[t]he central controller must be given information about the format and meaning of the unique identifier of the item, and would need direction as to where the unique identifier is stored in memory.” In light of the above-discussed evidence that “controller” has a well-known structural meaning, Defendants’ argument might perhaps be relevant to consideration of the enablement requirement under 35 U.S.C. § 112, ¶ 1, but is not persuasive as to the present claim construction dispute.

Finally, Defendants fail to support their contention that the known structure must be known to function in the specific manner set forth in the claims. The analysis of this issue as to the “hub” terms, addressed above, applies here as to the “controller” terms. *See Apex*, 325 F.3d at 1373; *see also Chrimar*, 732 F. App’x at 884–85; *Zeroclick*, 891 F.3d at 1008; *MTD*, 2019 WL 3770828, at *6.

The Court therefore hereby construes these above-identified “central controller” terms to have their **plain meaning**.

C. “management center system,” “management system,” and Related Terms

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“a system for communicating with user devices, sensors, appliances, and/or wireless HUBs for monitoring and/or control”	Indefinite and lack of written description under 35 U.S.C. § 112

(Dkt. #111, Ex. 1 at p. 3; Dkt. #119 at pp. 14–15). Plaintiff submits that these terms appear in Claims 33, 37, 38, 42, 116, 128, and 135 of the ’918 Patent. (Dkt. #119 at p. 14; Dkt. #144 at p. 19). Defendants submit that these terms appear in Claims 86, 103, and 108 of the ’983 Patent, Claims 38 and 135 of the ’918 Patent, and Claim 52 of the ’798 Patent. (Dkt. #131 at p. 26).

In addition to the terms “management center system” and “management system” (*see* Dkt. #119 at pp. 14–15), the parties submit the following larger “management system” terms (*see* Dkt. #119 at pp. 24 & 41–42; *see also* Dkt. #200, Ex. E at pp. 9–13; *id.*, Ex. F at pp. 5–8):

D57. “wherein the management center system is configured to perform a processing of the request for the multimedia information content in association with transmission of the multimedia information content to the digital television through a high definition multimedia interface” (’918 Patent, Claims 37, 135);

D58. “wherein the management center system is further configured to search a content server for the multimedia information content in conjunction with the processing of the request for the multimedia information content” (’918 Patent, Claim 38);

D59. “wherein the management center system is further configured to route the multimedia information content to accommodate the production by the digital television” (’918 Patent, Claim 38);

D83. “wherein the management center system is further configured to search a content server for the multimedia information content in conjunction with the processing of the request for the multimedia information content” (’918 Patent, Claim 38);⁷

D30. “wherein the management center system is configured to communicate a phone call with the first mobile terminal, a data from the first mobile terminal and

⁷ Term D83 is the same as term D58, above.

from a cellular network being converted to a converted data for transmission through the WiFi network” (’983 Patent, Claim 86);

D31. “wherein the management center system is configured to transmit the converted data through the WiFi network to accommodate the phone call” (’983 Patent, Claim 86);

D38. “wherein the management center system is further configured to communicate information for managing an item status of an item based on a wireless signal regarding an updated status of the item” (’983 Patent, Claim 103);

D40. “wherein the management center system is configured to communicate information about an updated status of an item in association with a short range wireless communication regarding the updated status” (’983 Patent, Claim 108); and

D100. “wherein the management system is configured to notify a user of the updated status according to a configuration setting” (’798 Patent, Claim 52).

1. The Parties’ Positions

Plaintiff argues that “[t]he claimed ‘management center system’ recites sufficiently definite structure,” and “[a]n example of a management center system is disclosed in Figure 16 of the ’918 patent.” (Dkt. #119 at p. 25).

Defendants respond: “The terms ‘management center’ and ‘management system’ imply only the generic function of managing something in an unspecified manner. They are well-recognized nonce words.” (*Id.* at p. 27). Defendants argue that “[o]n their own, they do not connote any structure—*i.e.*, a specific piece of hardware or an algorithm—to one of ordinary skill in the art, let alone sufficient structure to perform the recited functions.” (*Id.*) Defendants also argue: “[T]hat the management center interacts with a conventional WiFi network or a conventional high definition display says nothing about the structure of the system itself or *how* it is configured with the other conventional components to perform the claimed functions.” (*Id.* at p. 29). Finally, as to disclosures cited by Plaintiff, Defendants argue that “the specification describes the MC System depicted in Figure 16 solely by its function.” (*Id.*)

Plaintiff's reply brief, as to the "management center system" and "management system" terms, states in full as follows:

Defendants did not brief the construction of these terms other than as part of their alleged means-plus-function claim terms. Defendants originally argued that these terms were indefinite. Innovation's Opening Claim Construction Brief explains how that argument is wrong. Because Defendants did not raise the issue of definiteness apart from the means-plus-function analysis, Defendants have waived their original contention that these terms were indefinite.

(Dkt. #144 at pp. 19–20).

2. Analysis

Legal principles regarding 35 U.S.C. § 112, ¶ 6 are set forth above as to the "hub" terms.⁸

Claim 86 of the '983 Patent, for example, recites (emphasis added):

86. A *management center system* for managing information communications for multiple user terminals comprising:

a mapping table including information of a network address of a WiFi network and information of a unique identifier of a first mobile terminal; and

a network interface,

wherein the *management center system* is configured to communicate a phone call with the first mobile terminal, a data from the first mobile terminal and from a cellular network being converted to a converted data for transmission through the WiFi network;

wherein the *management center system* is configured to transmit the converted data through the WiFi network to accommodate the phone call;

wherein the *management center system* is configured to receive a request for an information content;

wherein the *management center system* is configured to transmit a signal corresponding to information content; wherein the signal comprises a compressed signal; and wherein the compressed signal is decompressed to accommodate production of the information content.

⁸ Plaintiff submitted in its opening brief that "[t]he specification of the '918 patent gives a rich, detailed description of the Figure 16 embodiment of a management center system or management system." (Dkt. #119 at p. 14). In its reply brief, Plaintiff asserted that "[b]ecause Defendants did not raise the issue of definiteness apart from the means-plus-function analysis, Defendants have waived their original contention that these terms were indefinite." (Dkt. #144 at pp. 19–20). Defendants' response brief asserts indefiniteness only under 35 U.S.C. § 112, ¶ 6 and not under 35 U.S.C. § 112, ¶ 2 more generally. (See Dkt. #131).

The claim thus expressly recites that the “management center system” comprises “a mapping table” and “a network interface.” Defendants do not contest that the “mapping table” and the “network interface” connote structure. (See Dkt. #131 at pp. 26–30.) The same analysis applies to the other claims at issue in the ’983 Patent, namely Claims 103 and 108, because those claims depend from above-reproduced Claim 86.

Claim 52 of the ’798 Patent depends from Claim 1, which recites a management system comprising a “centralized hub system,” which has been presented as a distinct disputed term (addressed above) and which the Court has found connotes structure.

The Court therefore finds that these disputed “management center system” and “management system” terms in the ’983 Patent and the ’798 Patent are not governed by 35 U.S.C. § 112, ¶ 6.

In the ’918 Patent, by contrast, Claim 33 for example recites (formatting modified; emphasis added):

33. A system comprising:
- a management center system;*
 - a wireless hub;
 - at least one mapping table configured to register a unique hub identifier of the wireless hub; and
 - at least one database configured to store user service profile information of a user account in the at least one mapping table, wherein the at least one database is configured to store information regarding a household item associated with the user account, the information regarding the household item including household item status information for the household item, the information regarding the household item including a unique identifier for the household item;
 - wherein the wireless hub is configured to receive a request for a particular information content;
 - wherein the wireless hub is configured to send a data package to the *management center system* through a wireless communication network based on the request for the particular information content, the data package including information for the unique hub identifier;
 - wherein the *management center system* is configured to perform a processing of the data package;

wherein the processing of the data package comprises identifying the wireless hub based on recognition of the unique hub identifier registered in the at least one mapping table;

wherein the wireless hub is configured to receive the particular information content through the wireless communication network in connection with identification, by the *management center system*, of the wireless hub;

wherein the wireless hub is configured to perform a conversion of a corresponding signal of the particular information content to accommodate production of the particular information content;

wherein the corresponding signal comprises a compressed signal;

wherein the wireless hub is configured to decompress the compressed signal to a decompressed signal;

wherein the wireless hub is further configured to communicate information about an updated status of the household item in conjunction with a short range wireless communication regarding the updated status; and

wherein, in connection with recognition, by the system, of information for the unique identifier for the household item associated with the short range wireless communication, the system is configured to update the household item status information for the household item corresponding to the updated status of the household item, wherein the wireless communication network is separate from a wireless channel for the short range wireless communication.

The claims at issue in the '918 Patent do not recite that the “management center system” comprises any particular structure, and Plaintiff fails to demonstrate that “management center system” has any known structural meaning in the art. Further, “the claim[s] do[] not describe how the ‘[management center system]’ interacts with other components . . . in a way that might inform the structural character of the limitation-in-question or otherwise impart structure to the ‘[management center system]’ as recited in the claim.” *Williamson*, 792 F.3d at 1351. For example, Plaintiff’s reliance on the recital in Claim 38 of the '918 Patent that “the management center system is further configured to search a content server for the multimedia information content . . .” is unavailing.

The Court therefore finds that the above-identified “management center system” terms in the '918 Patent are means-plus-function terms governed by 35 U.S.C. § 112, ¶ 6. As to the claimed functions, Plaintiff has not challenged Defendants’ proposals. The Court therefore turns to

whether the specification discloses corresponding structure. “[T]he patent specification must disclose with sufficient particularity the corresponding structure for performing the claimed function and clearly link that structure to the function.” *Triton*, 753 F.3d at 1378.

The specification discloses a “Management Center (MC) System” that is linked to the functions of processing a request, searching a content server, and routing multimedia information. *See* ’918 Patent at 21:33–35 (“a Management Center (MC) System receives, selects, converts, compresses, decompresses, and routs [*sic*] data to the user terminals”), 21:46–50 (“routing content to various connected devices”), 21:59–63 (“selecting” data) & 23:59–65 (“initiating communications with the MC System”) & Fig. 16 (illustrating “MC System”).⁹

Yet, Plaintiff does not show that the disclosed “MC System” is anything other than a general-purpose computer. *See, e.g., id.* at 22:11–12 (“the MC System includes data storage such as a hard disk”) & 22:19–20 (“the MC System may include software and/or hardware for filtering and treating viruses”).

Because the specification links the claimed function to a general-purpose computer, an algorithm is required. *See WMS Gaming, Inc. v. Int’l Game Tech.*, 184 F.3d 1339, 1349 (Fed. Cir. 1999) (“In a means-plus-function claim in which the disclosed structure is a computer, or microprocessor, programmed to carry out an algorithm, the disclosed structure is not the general purpose computer, but rather the special purpose computer programmed to perform the disclosed algorithm.”); *see also Net MoneyIN Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1367 (Fed. Cir. 2008)

⁹ Defendants submit that “Figure 16 and its associated description were not a part of the earliest application from which the elected claims of the ’983, ’918, and ’798 patents allegedly claim priority.” (Dkt. #147-1 at p. 4).

(citing *WMS Gaming*). Plaintiff’s discussion of the MC System in the Background section of its reply brief does not compel otherwise. (*See* Dkt. #144 at pp. 1–3).¹⁰

Also, Plaintiff has not demonstrated that the so-called “*Katz*” exception applies. That is, Plaintiff has not shown that the claimed functions could be performed by any general-purpose computer without special programming. *See In re Katz Interactive Call Processing Patent Litig.*, 639 F.3d 1303, 1316 (Fed. Cir. 2011) (“Absent a possible narrower construction of the terms ‘processing,’ ‘receiving,’ and ‘storing,’ . . . those functions can be achieved by any general purpose computer without special programming.”).

Plaintiff identifies no algorithms disclosed in the specification for performing the claimed functions. (*See* Dkt. #119 at pp. 14–15.) This lack of disclosure renders the claims at issue indefinite. *See Noah Sys., Inc. v. Intuit Inc.*, 675 F.3d 1302, 1319 (Fed. Cir. 2012) (“Computer-implemented means-plus-function claims are indefinite unless the specification discloses an algorithm to perform the function associated with the limitation.”); *see also Net MoneyIN*, 545 F.3d at 1367; *Williamson*, 792 F.3d at 1352–54.

¹⁰ *See* ’983 Patent at 12:37–52 (“The diaper management system 500 includes a diaper condition sensing module 510 and a central receiver/controller (CRC) 520. The CRC 520 operates on a conventional processing platform . . .”), 21:10–45 (“a Management Center (MC) System receives, selects, converts, compresses, decompresses, and rout[e]s data to the user terminals”), 21:51–58 (“Receiving, converting and transmitting multimedia content may be performed in two directions using the MC System.”), 21:64–22:18 (“The MC System also includes a mapping table and a routing module.”; “The MC System may also conveniently retain converted content (e.g., compressed, coded, decrypted, decompressed) for subsequent additional access.”), 24:4–9 (“some data are also compressed and reorganized at the MC System so that they have certain data package sizes and formats”; “signals sent from a wet diaper, fire alarm, and/or theft sensor”), 24:18–29 (“[t]he CHS [(‘centralized HUB system’)] communicates with the MC System”; “home appliances (e.g., TV set, PC, Handset, Printer, PALM, camera, Headset, game controller, refrigerator, etc.) may also function through a centralized HUB system (CHS)”), 24:25–29 (“The CHS can also be built into a cable modem, TV set top box, or other device.”) & 24:43–61 (“A handset (e.g., cellular phone) can receive Internet data through CHS and/or MS instead of communicating with a cellular base station.”) & 26:14–64 (“A variety of data transmission protocols may be used to transmit multimedia content to the MC System . . .”).

The Court therefore hereby construes these disputed terms as set forth in the following chart:

<u>Term</u>	<u>Construction</u>
“management center system” (’983 Patent, Claims 86, 103, 108)	Plain meaning (35 U.S.C. § 112, ¶ 6 does not apply)
“management system” (’798 Patent, Claim 52)	Plain meaning (35 U.S.C. § 112, ¶ 6 does not apply)
“wherein the management center system is configured to perform a processing of the request for the multimedia information content in association with transmission of the multimedia information content to the digital television through a high definition multimedia interface” (’918 Patent, Claims 37, 135)	35 U.S.C. § 112, ¶ 6 applies Function: “perform a processing of the request for the multimedia information content in association with transmission of the multimedia information content to the digital television through a high definition multimedia interface” Corresponding Structure: Indefinite
“wherein the management center system is further configured to search a content server for the multimedia information content in conjunction with the processing of the request for the multimedia information content” (’918 Patent, Claim 38)	35 U.S.C. § 112, ¶ 6 applies Function: “search a content server for the multimedia information content in conjunction with the processing of the request for the multimedia information content” Corresponding Structure: Indefinite

<p>“wherein the management center system is further configured to route the multimedia information content to accommodate the production by the digital television”</p> <p>(’918 Patent, Claim 38)</p>	<p>35 U.S.C. § 112, ¶ 6 applies</p> <p>Function: “route the multimedia information content to accommodate the production by the digital television”</p> <p>Corresponding Structure: Indefinite</p>
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D. “wireless signal conversion apparatus,” “signal conversion unit,” and “processing unit”

<p>“at least one processing unit configured to perform a conversion of the multimedia signal, wherein the conversion of the multimedia signal comprises decompressing, by a decoder, the compressed digital video signal to a decompressed signal”</p> <p>(’918 Patent, Claim 9)</p>	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>Innovation understands that the only issue with respect to this claim term is defendants’ contention that it is governed by pre-AIA § 112, para. 6. Thus, Innovation’s contention is limited to that issue.</p> <p>Innovation contends that this claim term recites sufficiently definite structure to one of ordinary skill in the art. Alternatively, if this term is governed by pre-AIA § 112, para. 6, the corresponding structure(s), act(s), or material(s): processor (see MTSCM 1000). The claimed function is: perform a conversion of the multimedia signal.</p>	<p>Governed by pre-AIA § 112, para. 6</p> <p>Function: “perform a conversion of the multimedia signal, wherein the conversion of the multimedia signal comprises decompressing, by a decoder, the compressed digital video signal to a decompressed signal”</p> <p>Structure: Indefinite under pre-AIA § 112 for failure to disclose corresponding structure</p>

“wherein wireless signal conversion apparatus is configured to: communicate, through the wireless communication network, information about an updated status of the household item in conjunction with a short range wireless communication regarding the updated status”
(’918 Patent, Claim 27)

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>Innovation understands that the only issue with respect to this claim term is defendants’ contention that it is governed by pre-AIA § 112, para. 6. Thus, Innovation’s contention is limited to that issue.</p> <p>Innovation contends that this claim term recites sufficiently definite structure to one of ordinary skill in the art. Alternatively, if this term is governed by pre-AIA § 112, para. 6, the corresponding structure(s), act(s), or material(s): network interface card (see MC System), or transmitter(s) and/or receiver(s) (see MC System). The claimed function is: communicate, through the wireless communication network, information about an updated status of the household item in conjunction with a short range wireless communication regarding the updated status.</p>	<p>Governed by pre-AIA § 112, para. 6</p> <p>Function: “communicate, through the wireless communication network, information about an updated status of the household item in conjunction with a short range wireless communication regarding the updated status”</p> <p>Structure: Indefinite under pre-AIA § 112 for failure to disclose corresponding structure</p>

<p align="center">“wherein the signal conversion unit is configured to decompress the compressed video signal to a decompressed video signal” ('918 Patent, Claim 128)</p>	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>Innovation understands that the only issue with respect to this claim term is defendants’ contention that it is governed by pre-AIA § 112, para. 6. Thus, Innovation’s contention is limited to that issue.</p> <p>Innovation contends that this claim term recites sufficiently definite structure to one of ordinary skill in the art. Alternatively, if this term is governed by pre-AIA § 112, para. 6, the corresponding structure(s), act(s), or material(s): converter (see MC System). The claimed function is: decompress the compressed video signal to a decompressed video signal.</p>	<p>Governed by pre-AIA § 112, para. 6</p> <p>Function: “decompress the compressed video signal to a decompressed video signal”</p> <p>Structure: Indefinite under pre-AIA § 112 for failure to disclose corresponding structure</p>

<p align="center">“wherein the signal conversion unit is configured to encode the decompressed video signal to produce an encoded signal for transmission to the digital television through a digital output interface, the encoded signal comprising a decompressed digital video signal” (’918 Patent, Claim 128)</p>	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>Innovation understands that the only issue with respect to this claim term is defendants’ contention that it is governed by pre-AIA § 112, para. 6. Thus, Innovation’s contention is limited to that issue.</p> <p>Innovation contends that this claim term recites sufficiently definite structure to one of ordinary skill in the art. Alternatively, if this term is governed by pre-AIA § 112, para. 6, the corresponding structure(s), act(s), or material(s): converter (see MC System), or DDVE 1104c. The claimed function is: encode the decompressed video signal to produce an encoded signal for transmission to the digital television through a digital output interface.</p>	<p>Governed by pre-AIA § 112, para. 6.</p> <p>Function: “encode the decompressed video signal to produce an encoded signal for transmission to the digital television through a digital output interface, the encoded signal comprising a decompressed digital video signal”</p> <p>Structure: Indefinite under pre-AIA § 112 for failure to disclose corresponding structure.</p>

(Dkt. #111, Ex. 1 at pp. 35–36, 38–40 & 51–53; Dkt. #119, Ex. 5 at pp. 15, 16 & 21–22; *see* Dkt. #119 at pp. 30, 34 & 43; *see also* Dkt. #131 at p. 30; Dkt. #200, Ex. F at pp. 8–9, 10–11 & 14–15).

1. The Parties’ Positions

Plaintiff argues that “[t]he claimed ‘signal conversion unit’ is part of a well-known class of structures,” and “[t]he claims themselves recite structural interconnectivity with other elements of the claims. (Dkt. #119 at pp. 34 & 35). Plaintiff submits that “[t]he specification also describes the structure and structural interconnection that examples of the signal conversion unit may have in the disclosed embodiments.” (*Id.* at p. 35). Likewise, Plaintiff argues that “[t]he claimed ‘processing unit’ is part of well-known classes of structures,” and “the term ‘central processing

unit’ is widely used in the electrical engineering arts and has a meaning so well known that it is found in technical dictionaries.” (*Id.* at p. 30).

Defendants respond that “[t]hese terms do not connote structure sufficient to perform the claimed functions and, therefore, must be construed under § 112, ¶ 6.” (Dkt. #131 at p. 31). Defendants also argue that “[t]he term must be construed under § 112, ¶ 6 regardless of whether it also appears in the preamble.” (*Id.* at p. 32). Further, Defendants argue that “[a] general-purpose processor or network adapter cannot perform the functions of the wireless signal conversion apparatus, signal conversion unit, and processing unit without some special programming or algorithm, and the asserted patents nowhere disclose such an algorithm.” (*Id.* at p. 33).

Plaintiff’s reply brief does not specifically address these terms. (*See* Dkt. #144).

2. Analysis

These disputed terms appear in Claims 9, 27, and 128 of the ’918 Patent, which recite (emphasis added):

9. A *wireless signal conversion apparatus* comprising:

an input interface configured to receive a multimedia signal through a wireless communication network, the multimedia signal comprising a compressed digital video signal;

at least one *processing unit* configured to perform a conversion of the multimedia signal, wherein the conversion of the multimedia signal comprises decompressing, by a decoder, the compressed digital video signal to a decompressed signal; wherein the conversion of the multimedia signal further comprises encoding, by an encoder, the decompressed signal to produce an encoded signal for transmission to a destination device,

wherein the encoded signal comprises a decompressed digital video signal; and

a high definition digital output interface configured to transmit the encoded signal to the destination device,

wherein the mobile terminal is configured to transmit the encoded signal to the destination device through a predetermined communication channel in conjunction with a navigational command for the predetermined communication channel;

wherein the predetermined communication channel comprises the high definitional [*sic*] digital output interface; and

wherein the destination device is a digital television.

* * *

27. The *wireless signal conversion apparatus* of claim 9, wherein *wireless signal conversion apparatus* is configured to:

communicate, through the wireless communication network, information about an updated status of the household item in conjunction with a short range wireless communication regarding the updated status.

* * *

128. A system comprising:

a management center system;

a wireless hub;

at least one mapping table configured to register a unique hub identifier of the wireless hub; and

at least one database configured to store user service profile information of a user account in the at least one mapping table,

wherein the wireless hub is configured to receive a request for a particular information content;

wherein the wireless hub is configured to send a data package to the management center system through a wireless communication network based on the request for the particular information content, the data package including information for the unique hub identifier;

wherein the management center system is configured to perform a processing of the data package;

wherein the processing of the data package comprises identifying the wireless hub based on recognition of the unique hub identifier registered in the at least one mapping table;

wherein the wireless hub is configured to receive the particular information content through the wireless communication network in connection with identification of the wireless hub;

wherein the wireless hub is configured to perform a conversion of a corresponding signal of the particular information content to accommodate production of the particular information content;

wherein the corresponding signal comprises a compressed signal;

wherein the wireless hub is configured to decompress the compressed signal to a decompressed signal;

wherein the wireless hub is further configured to receive a request for a multimedia information content for production by a digital television;

wherein the system further comprises a *signal conversion unit* configured to receive the multimedia information content and convert a corresponding signal of the multimedia information content to accommodate the production of the multimedia information content by the digital television;

wherein the corresponding signal of the multimedia information content comprises a compressed video signal;

wherein the *signal conversion unit* is configured to decompress the compressed video signal to a decompressed video signal; and

wherein the *signal conversion unit* is configured to encode the decompressed video signal to produce an encoded signal for transmission to the digital television through a digital output interface, the encoded signal comprising a decompressed digital video signal.

As to “wireless signal conversion apparatus,” this term appears only in the preambles of the claims here at issue.

In general, a preamble limits the invention if it recites essential structure or steps, or if it is “necessary to give life, meaning, and vitality” to the claim. *Pitney Bowes[, Inc. v. Hewlett-Packard Co.]*, 182 F.3d [1298,] 1305 [(Fed. Cir. 1999)]. Conversely, a preamble is not limiting “where a patentee defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention.” *Rowe v. Dror*, 112 F.3d 473, 478, 42 USPQ2d 1550, 1553 (Fed. Cir. 1997).

Catalina Mktg. Int’l, Inc. v. Coolsavings.com, Inc., 289 F.3d 801, 808 (Fed. Cir. 2002).

“Generally, the preamble does not limit the claims.” *Allen Eng’g Corp. v. Bartell Indus.*, 299 F.3d 1336, 1346 (Fed. Cir. 2002).

Here, Defendants do not show that the preamble term “wireless signal conversion apparatus” is limiting. (See Dkt. #131 at pp. 32–33). Instead, this preamble language is merely “descriptive.” *IMS Tech., Inc. v. Haas Automation, Inc.*, 206 F.3d 1422, 1434 (Fed. Cir. 2000) (“The phrase ‘control apparatus’ in the preamble merely gives a descriptive name to the set of limitations in the body of the claim that completely set forth the invention.”); see *Deere & Co. v. Bush Hog, LLC*, 703 F.3d 1349, 1358 (Fed. Cir. 2012) (“if the body of the claim describes a structurally complete invention, a preamble is not limiting where it ‘merely gives a name’ to the invention, extols its features or benefits, or describes a use for the invention”) (quoting *Catalina*, 289 F.3d at 809).

The Court therefore rejects Defendants’ proposal as to construing “wireless signal conversion apparatus” pursuant to 35 U.S.C. § 112, ¶ 6. There being no other dispute as to Claim 27 of the ’918 Patent, the Court construes “communicate, through the wireless communication network, information about an updated status of the household item in conjunction with a short range wireless communication regarding the updated status” to have its plain meaning.

As to “processing unit,” legal principles regarding 35 U.S.C. § 112, ¶ 6 are set forth above as to the “hub” terms. Here, Defendants have not shown that “processing unit” is a “nonce” term under *Williamson*, and Defendants submit no persuasive evidence that the term “processing unit” fails to connote structure in the relevant art. *See* 792 F.3d at 1350; *see also id.* at 1351 (noting that “modifiers” can impart structural meaning). Plaintiff submits a technical dictionary definition of “central processing unit,” thereby supporting Plaintiff’s position that the term “processing unit” refers to a known class of structures in the art. (*See* Dkt. #119, Ex. 6, *Microsoft Computer Dictionary* 132 (5th ed. 2002) (defining “CPU”: “Acronym for *central processing unit*. The computational and control unit of a computer. The CPU is the device that interprets and executes instructions. * * *”).

Disclosure in the specification regarding a “processor” is consistent with the evidence submitted by Plaintiff:

Where the MTSCM [(mobile terminal signal conversion module)] 1000 is provided as software, it operates in the context of an execution platform. That is, the MTSCM 1000 includes instructions that are stored in memory for execution by a *processor*. Any conventional or to-be-developed execution platform may be used. The *processor*, memory, and related elements such as a power supply are well known and need not be described herein to convey an understanding of the invention.

’918 Patent at 17:30–37 (emphasis added). Also, Plaintiff’s expert persuasively opines:

A processor is a known structural element in the electronics world; indeed, there are a number of different processors, but they are all understood to be structures.

A processing unit might be one processor, but it may comprise a combination of processors operating together as a unit in order to improve throughput.

(Dkt. #119, Ex. 7, May 23, 2019 McAlexander Decl. at ¶ 17). The opinions of Defendants’ expert to the contrary are unpersuasive. (*See id.*, Ex. 13, May 6, 2019 Johnson Decl. at ¶¶ 199–200). Finally, Defendants fail to support their contention that the known structure must be known to function in the specific manner set forth in the claims. The analysis of this issue as to the “hub” terms, addressed above, applies here as well. *See Apex*, 325 F.3d at 1373; *see also Chrimar*, 732 F. App’x at 884–85; *Zeroclick*, 891 F.3d at 1008; *MTD*, 2019 WL 3770828, at *6.

As to the “signal conversion unit,” however, Plaintiff fails to demonstrate that this term has any known meaning in the relevant art. Instead, this “unit” is recited merely functionally and is analogous to the term “cheque standby unit” as to which the Federal Circuit found 35 U.S.C. § 112, ¶ 6 applicable in *Diebold*. *See* 899 F.3d at 1301–02. Plaintiff’s reliance on “structural interconnectivity with other elements of the claims” (*see* Dkt. #119 at p. 35) is unavailing because “the claim does not describe how the ‘[signal conversion unit]’ interacts with other components . . . in a way that might inform the structural character of the limitation-in-question or otherwise impart structure to the ‘[signal conversion unit]’ as recited in the claim.” *See Williamson*, 792 F.3d at 1351. The Court therefore finds that 35 U.S.C. § 112, ¶ 6 applies to the “signal conversion unit.”

The parties present no dispute as to the claimed functions for the “signal conversion unit” term. These functions are “to decompress the compressed video signal to a decompressed video signal” and “to encode the decompressed video signal to produce an encoded signal for transmission to the digital television through a digital output interface, the encoded signal comprising a decompressed digital video signal.”

The Court thus turns to whether the specification discloses corresponding structure. “[T]he patent specification must disclose with sufficient particularity the corresponding structure for performing the claimed function and clearly link that structure to the function.” *Triton*, 753 F.3d at 1378. Plaintiff proposes that the corresponding structure for the “signal conversion unit” terms is “converter (see MC System)” or “DDVE 1104c.” (Dkt. #119, Ex. 5 at pp. 21–22).

The specification links the claimed functions to the “Video Compress Decoder 1104a” and the “Digital/Digital Video Encoder (DDVE) 1104c,” respectively:

The *Video Compress Decoder 1104a* is configured to include the appropriate compression/decompression (CODEC) module to accommodate *decompression of the received multimedia signal*.

* * *

The Video Compress Decoder 1104a outputs a decompressed digital multimedia signal that is passed to the Digital/Analog Video Encoder (DAVE) 1104b and/or the *Digital/Digital Video Encoder (DDVE) 1104c*. The DAVE 1104b is configured to prepare signals for analog external display terminals 1120, and *the DDVE 1104c is configured to prepare signals for digital external display terminals 1122*. The DAVE 1104b and DDVE 1104c respectively receive the decompressed multimedia signal and convert the signals to the format(s) and signal power level(s) required for the terminals to which they interface.

... [T]he DDVE 1104c provides output using standards such as DVI, DVI-D, HDMI, and IEEE1394. The signals respectively provided by the DAVE 1104b and DDVE 1104c are provided to the terminals through conventional interfaces 1106a-b. The DAVE 1104b functionality may be embodied as a video card that is configured accordingly. Examples of video cards that may be configured to provide the described functionality include but are not limited to the Diamond Stealth S60, ASUS V9400-X, or RADEON 7000.

’918 Patent at 18:61–64 & 19:9–32 (emphasis added).

Finally, Defendants fail to show that the “Video Compress Decoder 1104a” and “Digital/Digital Video Encoder (DDVE) 1104c” are general-purpose computers. Thus, no algorithm requirement applies. *See Net MoneyIN*, 545 F.3d at 1367.

The Court therefore hereby construes these disputed terms as set forth in the following chart:¹¹

<u>Term</u>	<u>Construction</u>
<p>“at least one processing unit configured to perform a conversion of the multimedia signal, wherein the conversion of the multimedia signal comprises decompressing, by a decoder, the compressed digital video signal to a decompressed signal”</p> <p>(’918 Patent, Claim 9)</p>	<p>Plain meaning</p> <p>(35 U.S.C. § 112, ¶ 6 does not apply)</p>
<p>“wireless signal conversion apparatus”</p> <p>(’918 Patent, Claim 27)</p>	<p>Not limiting</p>
<p>“communicate, through the wireless communication network, information about an updated status of the household item in conjunction with a short range wireless communication regarding the updated status”</p> <p>(’918 Patent, Claim 27)</p>	<p>Plain meaning</p>

¹¹ Defendants have also discussed findings of United States District Judge Liam O’Grady of the Eastern District of Virginia, such as findings that certain claims of different (albeit related) patents failed to satisfy the requirements of 35 U.S.C. § 101. *See Virginia Innovation Sciences, Inc. v. Amazon.com, Inc.*, No. 1:16-CV-861, Dkt. #57 (E.D. Va. Jan. 5, 2017). Defendants fail to demonstrate that those findings regarding 35 U.S.C. § 101 are relevant to any claim construction dispute as to the present patents-in-suit.

<p>“wherein the signal conversion unit is configured to decompress the compressed video signal to a decompressed video signal”</p> <p>(’918 Patent, Claim 128)</p>	<p>35 U.S.C. § 112, ¶ 6 applies</p> <p>Function: “decompress the compressed video signal to a decompressed video signal”</p> <p>Corresponding Structure: “Video Compress Decoder 1104a, and equivalents thereof”</p>
<p>“wherein the signal conversion unit is configured to encode the decompressed video signal to produce an encoded signal for transmission to the digital television through a digital output interface, the encoded signal comprising a decompressed digital video signal”</p> <p>(’918 Patent, Claim 128)¹²</p>	<p>35 U.S.C. § 112, ¶ 6 applies</p> <p>Function: “encode the decompressed video signal to produce an encoded signal for transmission to the digital television through a digital output interface, the encoded signal comprising a decompressed digital video signal”</p> <p>Corresponding Structure: “Digital/Digital Video Encoder (DDVE) 1104c, and equivalents thereof”</p>

¹² The parties have presented these “signal conversion unit” terms as distinct disputed terms, but the Court notes that both of these terms refer to the same signal conversion unit, which is recited in both terms as “*the* signal conversion unit.”

E. “transmitter” and “wireless transmitter” Terms

<p>“a transmitter configured to transmit, through a wireless transmission channel, a signal in connection with an initiation of a replenishment of an inventory of an item, the signal being transmitted through the wireless transmission channel in response to an indication of an updated status of the item, the signal comprising information corresponding to a unique identifier of the wireless device, information about the inventory of the item being stored in a database, a requirement of the item being included in the information about the inventory of the item” (’983 Patent, Claim 110)</p>	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>Innovation understands that the only issue with respect to this claim term is defendants’ contention that it is governed by pre-AIA § 112, para. 6. Thus, Innovation’s contention is limited to that issue.</p> <p>Innovation contends that this claim term recites sufficiently definite structure to one of ordinary skill in the art. Alternatively, if this term is governed by pre-AIA § 112, para. 6, the corresponding structure(s), act(s), or material(s): wireless and/or network interface (see CRC), or transmitter (see DCSM). The claimed function is: transmit, through a wireless transmission channel, a signal in connection with an initiation of a replenishment of an inventory of an item, the signal being transmitted through the wireless transmission channel in response to an indication of an updated status of the item.</p>	<p>Governed by pre-AIA § 112, para. 6</p> <p>Function: “transmit, through a wireless transmission channel, a signal in connection with an initiation of a replenishment of an inventory of an item, the signal being transmitted through the wireless transmission channel in response to an indication of an updated status of the item, the signal comprising information corresponding to a unique identifier of the wireless device, information about the inventory of the item being stored in a database, a requirement of the item being included in the information about the inventory of the item”</p> <p>Structure: Indefinite under pre-AIA § 112 for failure to disclose corresponding structure</p>

<p>“wireless transmitter configured to transmit, through a wireless transmission channel, an item status signal in connection with an initiation of an increase of a household inventory of an item, the wireless transmission channel being established for transmission of the item status signal in a local wireless communication network in response to an indication of an updated status of the item” (’443 Patent, Claim 1)</p>	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>Innovation understands that the only issue with respect to this claim term is defendants’ contention that it is governed by pre-AIA § 112, para. 6. Thus, Innovation’s contention is limited to that issue.</p> <p>Innovation contends that this claim term recites sufficiently definite structure to one of ordinary skill in the art. Alternatively, if this term is governed by pre-AIA § 112, para. 6, the corresponding structure(s), act(s), or material(s): wireless transmitter (see DSCM). The claimed function is: transmit, through a wireless transmission channel, an item status signal in connection with an initiation of an increase of a household inventory of an item.</p>	<p>Governed by pre-AIA § 112, para. 6</p> <p>Function: “transmit, through a wireless transmission channel, an item status signal in connection with an initiation of an increase of a household inventory of an item, the wireless transmission channel being established for transmission of the item status signal in a local wireless communication network in response to an indication of an updated status of the item”</p> <p>Structure: Indefinite under pre-AIA § 112 for failure to disclose corresponding structure</p>

(Dkt. #111, Ex. 1 at pp. 26–27 & 95–96; *see* Dkt. #119 at p. 28; *see also* Dkt. #131 at p. 34; Dkt. #200, Ex. E at pp. 1–2; *id.*, Ex. H at pp. 1–2).

1. The Parties’ Positions

Plaintiff argues that “[t]he claimed ‘transmitter’ and ‘wireless transmitter’ are part of well-known classes of structures,” and “[t]he claims themselves recite additional structural interconnectivity with other elements of the claims.” (Dkt. #119 at pp. 28 & 29).

Defendants respond: “The ‘transmitter’ terms do not connote structure sufficient to perform the specific algorithms claimed in the asserted patents, and § 112, ¶ 6 therefore applies. Though

the term ‘wireless transmitter’ refers to a generic class of structure, it does not connote structure sufficient to perform entirely the claimed functions.” (Dkt. #131 at p. 34).

Plaintiff’s reply brief does not specifically address these terms. (*See* Dkt. #144).

2. Analysis

Legal principles regarding 35 U.S.C. § 112, ¶ 6 are set forth above as to the “hub” terms.

Here, Defendants do not show that “transmitter” and “wireless transmitter” are nonce terms under *Williamson*, and Defendants fail to demonstrate that the terms “transmitter” and “wireless transmitter” lack structural meaning in the relevant art. *See* 792 F.3d at 1350. The specification explains that a “transmitter” sends signals using “conventional wireless communication technologies”:

The sensor 512 triggers the *transmitter 514* to establish a *wireless communication channel* between itself and the CRC [(central receiver/controller)] 520. A signal is sent by the *transmitter 514* to inform the CRC 520 that the diaper is wet. This wireless communication channel preferably uses wireless technologies such as UWB, Bluetooth, RFID, Spread Spectrum, or other *conventional wireless communication technologies*.

’983 Patent at 13:3–9 (emphasis added). The accompanying recital of a “wireless transmission channel” in the claims further connotes structure. *See* ’983 Patent, Cl. 110 (“transmitter configured to transmit, through a wireless transmission channel”); *see also* ’443 Patent, Cl. 1 (same).

Moreover, Plaintiff submits a technical dictionary definition of “transmitter,” thereby reinforcing that the terms “transmitter” and “wireless transmitter” refer to a known class of structures. (*See* Dkt. #119, Ex. 6, *Microsoft Computer Dictionary* 528 (5th ed. 2002) (“Any circuit or electronic device designed to send electrically encoded data to another location.”)). The opinions of Defendants’ expert to the contrary are unpersuasive. (*See id.*, Ex. 13, May 6, 2019 Johnson Decl. at ¶ 148). Finding that “transmitter” and “wireless transmitter” connote structure is

consistent with principles articulated by the Federal Circuit prior to the abrogated *Lighting World* decision. *See Greenberg*, 91 F.3d at 1583 (quoted above).

Finally, Defendants fail to support their contention that the known structure must be known to function in the specific manner set forth in the claims. The analysis of this issue as to the “hub” terms, addressed above, applies here as well. *See Apex*, 325 F.3d at 1373; *see also Chrimar*, 732 F. App’x at 884–85; *Zeroclick*, 891 F.3d at 1008; *MTD*, 2019 WL 3770828, at *6. Defendants’ reliance on *Danco* is unpersuasive for the same reasons set forth regarding the above-addressed “hub” terms. *See Danco*, 2017 WL 4225217, at *7. The Court concludes that Defendants have failed to rebut the presumption against means-plus-function treatment. Defendants present no alternative proposed constructions. No further construction is necessary.

The Court therefore hereby construes the disputed “**transmitter**” and “**wireless transmitter**” terms to have their **plain meaning**.

F. “memory,” “program code that includes instructions executable by said processor,” and “program code executable by the processor”

<p>“wherein the memory is configured to store a unique identifier for the item and information related with the household inventory of the item, the information related with the household inventory of the item including a purchase requirement of the item” (’443 Patent, Claim 1)</p>	
<p>Plaintiff’s Proposed Construction</p>	<p>Defendants’ Proposed Construction</p>
<p>Innovation understands that the only issue with respect to this claim term is defendants’ contention that it is governed by pre-AIA § 112, para. 6. Thus, Innovation’s contention is limited to that issue.</p> <p>Innovation contends that this claim term recites sufficiently definite structure to one of ordinary skill in the art. Alternatively, if this term is governed by pre-AIA § 112, para. 6, the corresponding structure(s), act(s), or material(s): database (see CRC). The claimed function is: store a unique identifier for the item and information related with the household inventory of the item.</p>	<p>Governed by pre-AIA § 112, para. 6.</p> <p>Function: “store a unique identifier for the item and information related with the household inventory of the item, the information related with the household inventory of the item including a purchase requirement of the item”</p> <p>Structure: Indefinite under pre-AIA § 112 for failure to disclose corresponding structure</p>

<p align="center">“a memory configured to store program code that includes instructions executable by said processor, said instructions comprising: . . .” (’443 Patent, Claim 29)</p>	
Plaintiff’s Proposal	Defendants’ Proposed Construction
<p>Innovation understands that the only issue with respect to this claim term is defendants’ contention that it is governed by pre-AIA § 112, para. 6. Thus, Innovation’s contention is limited to that issue.</p> <p>Innovation contends that this claim term recites sufficiently definite structure to one of ordinary skill in the art. Alternatively, if this term is governed by pre-AIA § 112, para. 6, the corresponding structure(s), act(s), or material(s): memory (see WHUB 804), or sensing module 510. The claimed function is: store program code that includes instructions executable by said processor.</p>	<p>Governed by pre-AIA § 112, para. 6.</p> <p>Function: store program code that includes instructions executable by said processor, said instructions comprising:</p> <ul style="list-style-type: none"> instructions for transmitting, through a wireless transmission channel, an item status signal in connection with an initiation of an increase of a household inventory of an item, the item status signal being transmitted through the wireless transmission channel in a local wireless communication network based on an indication of an updated status of the item, information related with the household inventory of the item being stored in a database, a purchase requirement of the item being included in the information related with the household inventory of the item; wherein the unique identifier corresponding to the wireless device is recognized in connection with a successful transmission of the item status signal; wherein a purchase request for the item is processed to replenish the household inventory based on recognition of the unique identifier; wherein information of a user account is communicated through a network communication channel to accommodate a processing of the purchase request for the item, the information of the user account comprising payment information for the purchase request; wherein the wireless transmission channel established for the transmission of the item status signal is separate from the network communication channel; wherein the item is associated with the wireless device; and wherein the wireless device is designated to transmit the item status signal <p>Structure:</p> <p>Indefinite under pre-AIA § 112 for failure to disclose corresponding structure</p>

<p align="center">“a memory, the memory storing program code executable by the processor to perform operations comprising: . . .” (’918 Patent, Claim 99)</p>	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>Innovation understands that the only issue with respect to this claim term is defendants’ contention that it is governed by pre-AIA § 112, para. 6. Thus, Innovation’s contention is limited to that issue.</p> <p>Innovation contends that this claim term recites sufficiently definite structure to one of ordinary skill in the art. Alternatively, if this term is governed by pre-AIA § 112, para. 6, the corresponding structure(s), act(s), or material(s): memory in MTSCM 1000. The claimed function is: storing program code executable by the processor to perform operations.</p>	<p>Governed by pre-AIA § 112, para. 6.</p> <p>Function: perform operations comprising: receiving, through a wireless communication network, a multimedia signal, the multimedia signal comprising a compressed digital video signal; converting the multimedia signal to produce a converted multimedia signal for production by a destination device; and transmitting the converted multimedia signal to the destination device through a predetermined communication channel in conjunction with a navigational command for the predetermined communication channel, the predetermined communication channel comprising a high definition digital output interface, wherein the converting comprises decompressing the compressed digital video signal to a decompressed signal; wherein the converting further comprises encoding the decompressed signal to an encoded signal for transmission through the predetermined communication channel; wherein the converted multimedia signal comprises the encoded signal; and wherein the destination device is a digital television</p> <p>Structure: Indefinite under pre-AIA § 112 for failure to disclose corresponding structure</p>

(Dkt. #111, Ex. 1 at pp. 96–97, 111–13 & 115–17; *see* Dkt. #119 at p. 28; *see also* Dkt. #200, Ex. F at pp. 12–14; *id.*, Ex. H at pp. 7–10).

1. The Parties' Positions

Plaintiff argues that “[t]he claimed ‘memory’ is part of well-known classes of structures,” and “[t]he claims themselves recite additional structural interconnectivity with other elements of the claims.” (Dkt. #119 at pp. 36 & 37). Plaintiff further argues that “[t]he specification also describes the structural interconnection that the memory may have in the disclosed embodiments.” (*Id.* at p. 37).

Defendants respond that the claims “define the ‘program code’ and related ‘instructions’ solely by the functions they perform.” (Dkt. #131 at p. 37).

Plaintiff replies that “the claims and patents here describe the operation and objectives of the ‘program code,’ and the claims describe how the ‘program code’ interacts with other structures.” (Dkt. #144 at p. 14). Plaintiff also submits that “[t]he terms ‘program’ and ‘code’ have well defined meanings to those of skill in the art.” (*Id.* at p. 15).

2. Analysis

Legal principles regarding 35 U.S.C. § 112, ¶ 6 are set forth above as to the “hub” terms. Claim 1 of the ’443 Patent recites, in relevant part (emphasis added):

1. A system for facilitating electronic communications, the system comprising:
 - a central controller;
 - a memory; and
 - a wireless transmitter configured to transmit, through a wireless transmission channel, an item status signal in connection with an initiation of an increase of a household inventory of an item, the wireless transmission channel being established for transmission of the item status signal in a local wireless communication network in response to an indication of an updated status of the item;

wherein the memory is configured to store a unique identifier for the item and information related with the household inventory of the item, the information related with the household inventory of the item including a purchase requirement of the item;

Plaintiff submits that “memory” has a well-known structural meaning in the relevant art (Dkt. #119 at pp. 36–37), and Defendants do not appear to dispute this point. Indeed, Defendants’ responsive claim construction brief does not appear to address this term. (*See* Dkt. #131).

As to the “program code” terms, Defendants argue that “[t]he hard work of devising actual solutions to these problems is left to others to figure out using only the generic components described in the patent, such as a wireless network interface or a processor, which cannot perform these functions without special programming.” (Dkt. #131 at p. 38). Defendants cite *Global Equity Mgmt. (SA) Pty. Ltd. v. Expedia, Inc.*, which found that the term “program code for configuring said at least one partition of said at least one secondary storage device through a secondary storage partitions window” was a means-plus-function term governed by 35 U.S.C. § 112, ¶ 6. *See* No. 2:16-CV-95, 2016 WL 7416132, at *27–*29 (E.D. Tex. Dec. 22, 2016) (“*GEMSA*”). *GEMSA* found that the term there at issue was “defined only by the function that it performs,” and “[h]ow the code interacts with other code or structure of the claimed invention is not described.” *Id.*, at *29.

Claim 29 of the ’443 Patent, by contrast, recites (emphasis added):

29. A wireless device configured to facilitate electronic communications, the wireless device comprising:

a processor;

a wireless radio chip containing information of a unique identifier corresponding to the wireless device;

a memory configured to store program code that includes instructions executable by said processor, said instructions comprising:

instructions for transmitting, through a wireless transmission channel, an item status signal in connection with an initiation of an increase of a household inventory of an item, the item status signal being transmitted through the wireless transmission channel in a local wireless communication network based on an indication of an updated status of the item, information related with the household inventory of the item being stored in a database, a purchase requirement of the item being included in the information related with the household inventory of the item;

wherein the unique identifier corresponding to the wireless device is recognized in connection with a successful transmission of the item status signal;

wherein a purchase request for the item is processed to replenish the household inventory based on recognition of the unique identifier;

wherein information of a user account is communicated through a network communication channel to accommodate a processing of the purchase request for the item, the information of the user account comprising payment information for the purchase request;

wherein the wireless transmission channel established for the transmission of the item status signal is separate from the network communication channel;

wherein the item is associated with the wireless device; and

wherein the wireless device is designated to transmit the item status signal.

The claim thus recites substantial detail regarding instructions included in the program code, particularly with reference to a database and household inventory. *Cf. Linear Tech. Corp. v. Impala Linear Corp.*, 379 F.3d 1311, 1320 (Fed. Cir. 2004) (“when the structure-connoting term ‘circuit’ is coupled with a description of the circuit’s operation, sufficient structural meaning generally will be conveyed to persons of ordinary skill in the art, and § 112 ¶ 6 presumptively will not apply”). Likewise, Claim 99 of the ’918 Patent recites (emphasis added):

99. A wireless signal conversion apparatus comprising:

a processor; and *a memory, the memory storing program code executable by the processor to perform operations comprising:*

receiving, through a wireless communication network, a multimedia signal, the multimedia signal comprising a compressed digital video signal;

converting the multimedia signal to produce a converted multimedia signal for production by a destination device; and

transmitting the converted multimedia signal to the destination device through a predetermined communication channel in conjunction with a navigational command for the predetermined communication channel, the predetermined communication channel comprising a high definition digital output interface,

wherein the converting comprises decompressing the compressed digital video signal to a decompressed signal;

wherein the converting further comprises encoding the decompressed signal to an encoded signal for transmission through the predetermined communication channel;

wherein the converted multimedia signal comprises the encoded signal; and

wherein the destination device is a digital television.

The claim thus recites substantial detail regarding the operations that the program code must be executable to perform, and additional context is provided by the recital that “the

destination device is a digital television.” See *Zeroclick*, 891 F.3d at 1006–09 (finding that “user interface code,” considering in the context of the claims at issue, was not a means-plus-function term). Although Defendants argue, for example, that these recitals fail to set forth adequate detail about how “decompressing” is performed (*see* Dkt. #131 at p. 38), “the patentee is not required to include in the specification information readily understood by practitioners, lest every patent be required to be written as a comprehensive tutorial and treatise for the generalist, instead of a concise statement for persons in the field.” *Verve, LLC v. Crane Cams, Inc.*, 311 F.3d 1116, 1119 (Fed. Cir. 2002). The specification provides additional context by disclosing:

Where the MTSCM 1000 is provided as software, it operates in the context of an execution platform. That is, the MTSCM 1000 includes instructions that are stored in memory for execution by a processor. Any conventional or to-be-developed execution platform may be used. The processor, memory, and related elements such as a power supply are well known and need not be described herein to convey an understanding of the invention.

’918 Patent at 17:30–37.

Extrinsic dictionary definitions submitted by Plaintiff further support Plaintiff’s position that “program code” refers to a known class of structures in the relevant art. (*See* Dkt. #144, Ex. 20, *Microsoft Computer Dictionary* 424 (5th ed. 2002) (defining “program” as: “A sequence of instructions that can be executed by a computer. The term can refer to the original source code or to the executable (machine language) version.”); *id.* at p. 106 (defining “code” as: “Program instructions. Source code consists of human-readable statements written by a programmer in a programming language. Machine code consists of numerical instructions that the computer can recognize and execute and that were converted from source code.”); *cf. Personalized Media*, 161 F.3d at 704 (“‘Detector’ is not a generic structural term such as ‘means,’ ‘element,’ or ‘device’; nor is it a coined term lacking a clear meaning, such as ‘widget’ or ‘ram-a-fram.’”)).

The Court concludes that Defendants have failed to rebut the presumption against means-plus-function treatment. Defendants present no alternative proposed constructions. No further construction is necessary.¹³

The Court accordingly hereby construes the disputed “**memory**” and “**program code**” terms to have their **plain meaning**.

G. “updated status [of the item]” and “updated item status”

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“the current condition or amount of an item”	“a detected change in the status” / “a detected change in the item status”

(Dkt. #111, Ex. 1 at p. 2; Dkt. #119 at p. 10; Dkt. #131 at p. 39; *see* Dkt. #200, Ex. A at p. 1; *see also id.*, Ex. B at p. 2 of 6; *id.*, Ex. C at p. 1; *id.*, Ex. D at p. 2). The parties submit that this term appears in Claims 22–24, 27, 31, 38, 43, 62–64, 103, 105, 108, 110, 117–119, 123, and 143 of the ’983 Patent, Claims 26–30, 33, 111, 112, and 115 of the ’918 Patent, Claims 1, 5, 52, and 60 of the ’798 Patent, and Claims 1 and 29 of the ’443 Patent. (Dkt. #200, Ex. A at p. 1; *id.*, Ex. B at p. 2 of 6; *id.*, Ex. C at p. 1; *id.*, Ex. D at p. 2).

1. The Parties’ Positions

Plaintiff argues that “Defendants’ proposed construction – a detected change – would eliminate the embodiment in which the DCSM periodically determines and sends the updated *status* to the CRC.” (Dkt. #119 at p. 11).

¹³ At the August 28, 2019 hearing, Defendants cited *Altiris*, in which the Federal Circuit found, as to certain “commands” recited as part of a “means for booting . . .,” “[a]lthough ‘commands’ represent structure (in the form of software), it is not sufficient structure to perform the entirety of the function.” *Altiris, Inc. v. Symantec Corp.*, 318 F.3d 1363, 1376 (Fed. Cir. 2003). *Altiris* thus addressed a term with the word “means” and “the presumption that the claim is a means-plus-function claim.” *Id.* *Altiris* is therefore unpersuasive here.

Defendants respond that “the patent claims, specification, and Judge O’Grady’s prior construction of the same term (‘item status’) and a related term (‘updated condition of a merchandise’) [in *VIS I*] all consistently describe an ‘updated’ status as a *detected change* in status.” (Dkt. #131 at p. 39).

Plaintiff replies by reiterating its opening arguments. (Dkt. #144 at p. 18).

2. Analysis

Claim 22 of the ’983 Patent, for example, recites (emphasis added):

22. A wireless HUB system for managing information communications comprising:

- an input interface configured to receive a wireless signal through a wireless communication network;

- a decoder; and

- a network interface configured to provide a communication through a network communication channel,

- wherein the wireless HUB system is configured to perform a conversion of the wireless signal to accommodate production of a corresponding information content, the wireless signal comprising a compressed signal, the conversion comprising decompressing the compressed signal;

- wherein the decoder is configured to decompress the compressed signal;

- wherein the wireless HUB system is further configured to communicate, through the network communication channel, information for managing an item status of an item in connection with a short range wireless communication regarding an *updated status of the item*; and

- wherein the network communication channel is separate from a wireless channel for the short range wireless communication.

The parties have also discussed Claim 110 of the ’983 Patent, which recites in relevant part (emphasis added): “a transmitter configured to transmit, through a wireless transmission channel, a signal in connection with an initiation of a replenishment of an inventory of an item, the signal being transmitted through the wireless transmission channel in response to an indication of an *updated status of the item*, the signal comprising information corresponding to a unique identifier of the wireless device, information about the inventory of the item being stored in a database, a requirement of the item being included in the information about the inventory of the item.”

Defendants argue that this “updated status” must reflect a “detected change in the status.” No such limitation is evident based on the language of this claim.

Other claims at issue, however, use the word “updated” with reference to “detection.” *See Phillips*, 415 F.3d at 1314 (“Other claims of the patent in question, both asserted and unasserted, can also be valuable sources of enlightenment as to the meaning of a claim term. Because claim terms are normally used consistently throughout the patent, the usage of a term in one claim can often illuminate the meaning of the same term in other claims.”) (citation omitted). For example, Claim 27 of the ’983 Patent recites (emphasis added):

27. The wireless HUB system of claim 26, wherein the short range wireless communication comprises a signal; and wherein the short range wireless communication is *triggered* by a *detection* of the *updated status*, the signal comprising information corresponding to a unique identifier associated with the item.

Additional claims that are similar in this regard include: ’983 Patent, Claim 117 (“the wireless transmission channel being established for transmission of the signal in response to a detection of an updated status of the item by the item status sensing device”); ’983 Patent, Claim 143 (“a detection of the updated status”); ’443 Patent, Claim 1 (“in response to an indication of an updated status of the item”); ’443 Patent, Claim 29 (“the item status signal being transmitted through the wireless transmission channel in a local wireless communication network based on an indication of an updated status of the item”); ’798 Patent, Claim 5 (“wherein the short range wireless communication is triggered by a detection, by a sensor, of the updated status”); ’798 Patent, Claim 60 (“wherein the short range wireless communication is initiated by a detection of the updated status”); and ’918 Patent, Claim 112 (“wherein the short range wireless communication is initiated by a detection, by a sensor, of the household item status”).

The specification is consistent with interpreting “updated” as involving a change: “When the diaper condition *changes*, such as when it is wet, the DCSM [(diaper condition sensing module)] sensor detects the *updated condition* of the diaper.” ’983 Patent at 14:7–9 (emphasis added). This disclosure thus refers to an “updated” condition in the context of “changes.” *Id.* Similarly, the specification discloses that the “DCSM sensor monitors diaper condition” and the “DCSM transmitter sends condition update to CRC [(central receiver/controller)] when the diaper is determined to be wet.” ’983 Patent at Fig. 7 (elements 702 and 704); *see* ’443 Patent at 3:5–9 (“According to still another aspect, the present invention accommodates the delivery of diaper status updates through a wireless connection. A sensor detects the condition of the diaper and accommodates a status indication when the current indication requires an updated [*sic*].”).

Plaintiff cites disclosure that “[t]he CRC may also *poll* the DCSM after a given period of time to ensure that the diaper condition has been *updated*.” ’983 Patent at 14:27–29 (emphasis added). At first blush, this disclosure appears to refer to polling the DCSM to obtain the most current status. This reading is also supported by the extrinsic, general-purpose dictionary definition of “update” submitted by Plaintiff, namely “to bring up to date.” (Dkt. #144, Ex. 21, *Merriam-Webster’s Collegiate Dictionary* 1298 (10th ed. 1997)).

Yet, this disclosure appears as part of the following passage:

In the situation where there are multiple children/diapers being monitored, the CRC provided alert may be to a PC having a display screen with a map of the room(s) and the estimated location of the wet diaper. Other CRC provided alerts may merely notify additional caregiver(s) as to the status of the diaper, without the location, so that the additional caregiver(s) may be apprised of the status. The CRC may also poll the DCSM after a given period of time to *ensure that the diaper condition has been updated*. The CRC may be configured with configuration settings that allow a caregiver to specify when and how they should be updated. For example, if one caregiver is a baby sitter watching the child while the parents are out, the parent may configure the CRC not to send an alert to them when the diaper is first *detected as being wet*, but to wait until a certain period of time elapses. By contrast, the baby-sitter alert may be provided immediately. If the certain period

of time passes and the *diaper remains wet*, the CRC can then *notify the parent about the diaper condition, and the parent will realize that the diaper has not been changed*.

'983 Patent at 14:21–40.

Contrary to Plaintiff's argument, this disclosure does not refer to "periodically polling" the DCSM to determine the current condition of a diaper. (*See* Dkt. #119 at p. 11). Read in context, this disclosure regarding "poll[ing]" refers to whether "the diaper condition has been *updated*" in the context of whether the diaper has been *changed*.

Finally, at the August 28, 2019 hearing, Plaintiff expressed concern that referring to detection in the construction of the "updated status" terms might improperly be interpreted as requiring detection of a change to occur as soon the change occurs. No such immediate detection requirement is apparent. Instead, the above-discussed evidence refers to whether a change has occurred, not necessarily whether the change has been detected. Other claim language, such as recited in above-reproduced Claim 27, recites detecting a change.

The Court accordingly hereby construes "**updated status [of the item]**" and "**updated item status**" to mean "**a change in [item] status.**"¹⁴

H. "item status signal"

Plaintiff's Proposed Construction	Defendants' Proposed Construction
"a signal corresponding to a condition or amount of an item"	"a signal conveying information regarding the status of an item"

¹⁴ Defendants cite the analysis of Judge O'Grady in *VIS I* construing the term "an updated condition of a merchandise" in related patents to mean "a detected *change* in the condition of an item." (Dkt. #131 at pp. 41–42) (emphasis added). The court in *VIS I* found: "The patent . . . presumes some event that prompts the user alert. It does not contemplate a continuous stream of information providing real-time updates to the user. Figure 7 confirms this." 2017 WL 3599642, at *17. To whatever extent the construction of this different term is relevant to the present dispute as to "updated item status," Judge O'Grady's analysis provides additional persuasive support for rejecting Plaintiff's proposed construction.

(Dkt. #111, Ex. 1 at p. 3; Dkt. #119 at p. 15; Dkt. #131 at p. 43; Dkt. #200, Ex. D at p. 3). The parties submit that this term appears in Claims 1, 16, and 29 of the '443 Patent. (Dkt. #144 at p. 20; Dkt. #200, Ex. D at p. 3).

1. The Parties' Positions

Plaintiff argues that “all that the claim requires is that the ‘item status signal’ conveys information such that the claimed ‘central controller’ can identify the item, provided that there is a successful transmission of the item status signal.” (Dkt. #119 at p. 15).

Defendants respond that “Plaintiff is bound to the [*VIS I*] previous construction under the doctrine of collateral estoppel.” (Dkt. #131 at p. 43).

Plaintiff replies that “[t]he construction of ‘item status signal’ has to be broad enough to encompass the RFID embodiment,” and “Innovation’s arguments are not the same as those made in Virginia [in *VIS I*].” (Dkt. #144 at pp. 20 & 21).

2. Analysis

Defendants argue for a finding of collateral estoppel based on Judge O’Grady’s construction of “item status signal” in the related '844 Patent as meaning “a signal conveying information regarding the status of an item.” *VIS I*, 2017 WL 3599642, at *15–*16. The Federal Circuit affirmed this construction. *Innovation Sciences*, No. 2018-1495, 2019 WL 2762976, at *7.

“Collateral estoppel applies when, in the initial litigation, (1) the issue at stake in the pending litigation is the same, (2) the issue was actually litigated, and (3) the determination of the issue in the initial litigation was a necessary part of the judgment.” *Harvey Specialty & Supply, Inc. v. Anson Flowline Equip. Inc.*, 434 F.3d 320, 323 (5th Cir. 2005); see Dkt. #131 at p. 43 (citing *Rabo Agrifinance, Inc. v. Terra XXI, Ltd.*, 583 F.3d 348, 353 (5th Cir. 2009)). The doctrine of

collateral estoppel has been applied to claim construction. *See, e.g., Nestle USA, Inc. v. Steuben Foods, Inc.*, 884 F.3d 1350, 1352 (Fed. Cir. 2018).

The '443 Patent is a continuation of the '844 Patent that was at issue in *VIS I*. These patents therefore share the same specification. Judge O'Grady considered the specification in *VIS I* when construing "item status signal":

Nowhere in the specification or the claims is the "item status signal" used in the context of anything other than a change in the condition of a merchandise. For example, the "signal" is not used as a proxy for a purchase request or as a user identification tool. Instead, the "signal" appears simply to be the vehicle through which the information regarding the change in the condition of the merchandise is conveyed, and it is consistently used in that context.

2017 WL 3599642, at *16.

Yet, the '844 Patent uses the term "item status signal" in a context different from how the term is used in the '443 Patent. Claim 28 of the '844 Patent, for example, recites in relevant part (emphasis added):

28. A wireless device configured to facilitate electronic communication of information, the wireless device comprising:

...

a memory configured to store program code that includes instructions executable by said processor, said instructions comprising:

instructions for transmitting, through a wireless transmission channel, *an item status signal to provide information* regarding an updated condition of a merchandise,¹⁵

In the present case, by contrast, Claim 1 of the '443 Patent¹⁶ recites (emphasis added):

1. A system for facilitating electronic communications, the system comprising:
a central controller;
a memory; and

¹⁵ In *VIS I*, "[a]ll of the independent claims asserted against Amazon provide[d] that the 'item status signal' is used 'to provide information regarding an updated condition of a merchandise.'" 2017 WL 3599642, at *15.

¹⁶ The other claims identified for this disputed term, namely Claims 16 and 29 of the '443 Patent, depend from Claim 1. (Dkt. #144 at p. 20).

a wireless transmitter configured to transmit, through a wireless transmission channel, an *item status signal* in connection with an initiation of an increase of a household inventory of an item, the wireless transmission channel being established for transmission of the *item status signal* in a local wireless communication network in response to an indication of an updated status of the item;

wherein the memory is configured to store a unique identifier for the item and information related with the household inventory of the item, the information related with the household inventory of the item including a purchase requirement of the item;

wherein the wireless transmitter is designated to transmit the *item status signal*;

wherein the central controller is configured to receive *information regarding the item status signal* and identify the item in connection with a successful transmission of the *item status signal* from the wireless transmitter;

wherein the wireless transmitter is associated with the item;

wherein the *information regarding the item status signal* comprises information for the unique identifier for the item;

wherein the central controller is further configured to identify the item is based on recognition of the unique identifier of the item stored in the memory;

wherein the central controller is further configured to perform a processing of a purchase request for the item to increase the household inventory of the item in connection with identification of the item;

wherein the central controller is further configured to communicate information for the processing of the purchase request through a network communication channel to complete the processing of the purchase request, the network communication channel being separate from the wireless transmission channel established for the transmission of the *item status signal*;

wherein the information for the processing of the purchase request comprises a shipping payment information for the purchase request address for the item; and

wherein the central controller is configured to send confirmation information regarding the processing of the purchase request.

The claim in the present case thus refers to information *regarding* an item status signal rather than information *provided by* an item status signal. This difference in the contexts is a “material difference” such that, at least for purposes of collateral estoppel, the issue in the present case is different from the issue in *VIS I. Nestle*, 884 F.3d at 1352; *see e.Digital Corp. v. Futurewei Techs., Inc.*, 772 F.3d 723, 727 (Fed. Cir. 2014) (“a court cannot impose collateral estoppel to bar a claim construction dispute solely because the patents are related”). Collateral estoppel therefore

does not apply as to the construction of “item status signal.” Likewise, although Federal Circuit claim constructions can have a “national *stare decisis* effect,”¹⁷ the recital of information *regarding* an item status signal (in the present case) differs substantially from the recital of information *provided by* an item status signal (in *VIS I* and *Innovation Sciences*).

The present dispute between the parties reflects this difference. Whereas Defendants propose that an “item status signal” must itself convey information, Plaintiff argues that information could merely be *inferred* from the item status signal. In this regard, the specification discloses that “[t]he transmitter 514 may use various communication techniques,” and “the function may be provided by causing the circuit loop of the RFID tag to transition from open to close [*sic*, closed] when the diaper condition (e.g., wet) is detected by the sensor, which automatically causes the ID Tag to be sensed by the tag reader of the CRC.” ’443 Patent at 11:10–14. Thus, the specification contemplates that a signal could merely convey an “ID Tag,” and the “wet” condition could be inferred from the sensing of the ID Tag.

Still, in disclosure regarding this same “transmitter 514,” the specification frames this type of communication as conveying the status of an item:

The sensor 512 triggers the transmitter 514 to establish a wireless communication channel between itself and the CRC 520. A *signal* is sent by the transmitter 514 to *inform the CRC 520 that the diaper is wet*. This wireless communication channel preferably uses wireless technologies such as UWB, Bluetooth, *RFID*, Spread Spectrum, or other conventional wireless communication technologies.

’443 Patent at 10:48–54 (emphasis added).

Thus, although the findings in *VIS I* and *Innovation Sciences* do not give rise to collateral estoppel or *stare decisis*, the Court arrives at a substantially similar conclusion, finding that an

¹⁷ *Ottah v. Fiat Chrysler*, 884 F.3d 1135, 1140 (Fed. Cir. 2018) (quoting *Key Pharm. v. Hercon Labs. Corp.*, 161 F.3d 709, 716 (Fed. Cir. 1998)).

“item status signal” need not itself convey “information” but must relate to the status of an item. This is consistent with the discussion in *Innovation Sciences* noting that the patentee “points to an embodiment in the specification in which a DCSM [(diaper condition sensing module)] uses an RFID tag to transmit an item status signal,” and “as Amazon points out, ‘[e]ven if the item status signal of the patent consists of an RFID ID, it reflects the ‘item status’ of the diaper being monitored by that diaper probe sensor.” 2019 WL 2762976, at *7 (citation omitted).

The Court therefore hereby construes **“item status signal”** to mean **“a signal regarding the status of an item.”**

I. “[a/the] short range wireless communication [channel]”

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“Zigbee or the equivalent”	“wireless communication with a communication range of up to a few centimeters”

(Dkt. #111, Ex. 1 at p. 4; Dkt. #119, Ex. 5 at pp. 3–4; Dkt. #131 at p. 46; Dkt. #200, Ex. A at p. 3; *id.*, Ex. B at p. 3 of 6; *id.*, Ex. C at p. 2). The parties submit that this term appears in Claims 22, 23, 27, 31, 43, 105, 108, 117, and 143 of the ’983 Patent, Claims 26, 27, 29, 30, 33, and 111–114 of the ’918 Patent, and Claims 1, 5, 6, and 60 of the ’798 Patent. (Dkt. #200, Ex. A at p. 3; *id.*, Ex. B at p. 3 of 6; *id.*, Ex. C at p. 2).

1. The Parties’ Positions

Plaintiff argues that “[t]he patent specification specifically links the use of ZigBee (or Bluetooth) to the relevant working range between the sensors and the central receiver.” (Dkt. #119 at p. 17).¹⁸

¹⁸ In the parties’ briefing and in the evidence, this term appears as either “ZigBee” or “Zigbee.” These capitalizations appear to be used interchangeably.

Defendants respond that “[t]he specification emphasizes that the HUB utilizes short range communication to authenticate the cellular phone,” and “Zigbee is only described in the specification for use as the WPAN secure channel, which the specification expressly distinguishes from the short range communication channel used for authentication.” (Dkt. #131 at p. 47).

Plaintiff replies that its proposal “is based on the patent specification, and is supported by relevant extrinsic evidence.” (Dkt. #144 at p. 22).¹⁹

2. Analysis

Claim 22 of the '983 Patent, for example, recites (emphasis added):

22. A wireless HUB system for managing information communications comprising:

- an input interface configured to receive a wireless signal through a wireless communication network;

- a decoder; and

- a network interface configured to provide a communication through a network communication channel,

- wherein the wireless HUB system is configured to perform a conversion of the wireless signal to accommodate production of a corresponding information content, the wireless signal comprising a compressed signal, the conversion comprising decompressing the compressed signal;

- wherein the decoder is configured to decompress the compressed signal;

- wherein the wireless HUB system is further configured to communicate, through the network communication channel, information for managing an item status of an item in connection with *a short range wireless communication* regarding an updated status of the item; and

- wherein the network communication channel is separate from a wireless channel for the *short range wireless communication*.

¹⁹ Plaintiff also submits an unrelated patent application publication that refers to “an RF transmitter, using well known standards for short range transmission, e.g. less than 100m, such as Bluetooth, ZigBee, or cellular phone standards such as GSM, to enable use of SMS.” (Dkt. #119, Ex. 12, WO 2004/036521 A2 (sometimes referred to as the “Marshall” reference) at p. 7, ll. 3–17). Plaintiff fails to show, however, that this statement demonstrates any well-known technical meaning for “short range wireless communication,” let alone that this statement in an unrelated patent application is relevant to how the patentee used the term “short range wireless communication” in the present patents-in-suit.

This claim thus recites using “short range wireless communication” in the context of “managing an item status of an item.”

Defendant notes that the specification refers to “short range of a few centimeters” (emphasis added):

According to another aspect, the present invention facilitates a systematical solution for mobile payment (or the communication of other information, as well as the receipt of information such as alerts). Preferably, this aspect of the present invention implements a cellular network, a wireless personal area network (WPAN) and wireless identification technology. Various technologies may be used for these components, including but not limited to 3G technology for the cellular network; Zigbee, Bluetooth, or UWB technologies for the WPAN; and RFID (e.g., NFC) for the wireless identification technology.

FIG. 3 illustrates an example of a system 300 that implements this aspect of the present invention. The system 300 includes a user equipment (e.g., cellular phone, PDA, etc.) 310 and wireless HUB 320, which is connected to servers 330 through a network 340, such as the Internet.

* * *

The handset 310 is equipped with a tag that provides a unique identifier that can be wirelessly communicated to the WHUB 320. A preferred tag is a Near Field Communication (NFC) tag 312. NFC provides *short-range wireless connectivity* that uses *magnetic field induction* to enable communication between the devices. It has a *short range of a few centimeters*, which is believed to be advantageous for applications of this aspect of the present invention. Although NFC is preferred, RFID or other substitutes may also be provided. The handset 310 also includes a WPAN transceiver 314, which allows additional communication channel between the handset and the WHUB 320.

The wireless WHUB 320 is similarly equipped with an NFC reader 322, a WPAN transceiver 324 and a network adaptor 326. The NFC technology accommodates secure and automatic authentication and data exchange between the NFC tag and NFC reader. According to this aspect of the present invention, the NFC is uniquely associated with other information that allows the appropriate action (payment, alert, etc.) to take place. For example, where the system is being used to accommodate mobile payment, the RFID tag is associated with the user’s bank account. Further, *once the device is authenticated through the unique identifier, a second secure communication channel with more capabilities is established* between the handset 310 and WHUB 320. This allows the action request and related communications to be reliably transmitted between the two devices.

Accordingly, once the NFC based authentication is accomplished, a secure wireless connection between the handset 310 and WHUB 320 is established. *This communication can implement the WPAN transceiver, which has a higher data rate and longer operational range compared to NFC.* The secure communication allows the exchange of additional information related to the action, such as price and credit card information for a purchase request and corresponding payment scenario, to be sent between the handset 310 and the WHUB 320. The secure communication can be implemented by hardware (e.g., a dedicated hardware chipset) and software (e.g., data encryption algorithm).

The WHUB 320 can also exchange data with other WPAN devices 350. It may be useful for the WHUB 320 to communicate with these devices 340 to exchange information related to the action. For example, the WHUB 320 may collect water usage information from a water meter equipped with the WPAN device 340 functionality. This data may be stored locally by the WHUB 320, or may be transmitted to the appropriate server 330 through the network connection 350. The data does not necessarily need to be collected by the WHUB 320 concurrently with the user-requested action. For example, the acquisition and transmission of water usage information may occur periodically, and separate from the user's request to make a corresponding payment.

'983 Patent at 10:17–11:28; *see id.* at 30:32–36 (the wireless HUB “authenticates user's identification through a short range Electromagnetic (EM) radiation”).

Thus, in this embodiment, the “short-range wireless connectivity” is distinguished from communications that have “longer operational range.” *Id.* at 10:45–50 & 11:5–8. The specification explicitly notes that the “short range wireless connection” can be separate:

FIG. 3 illustrates and provides a system process in accordance with this aspect of the invention. In FIG. 3, *the secure communication channel is separate from the short range wireless connection used to receive the unique identifier* in order to achieve a greater bandwidth. Alternatively, the authentication and data transmission upon the completion of the authentication can share a wireless communication channel.

'983 Patent at 30:65–31:5 (emphasis added).

Defendants fail to demonstrate, however, that the above-reproduced disclosure characterizing NFC as “short-range wireless connectivity” necessarily corresponds to the recital of “short range wireless communication” in the claims. Instead, the above-reproduced claim

recites merely that “the *network communication channel* is separate from a wireless channel for the short range wireless communication.” Of particular note, the above-reproduced disclosures refer to “3G technology for the cellular network.” *See* ’983 Patent at 10:17–27. This distinction between cellular communication and “short range” communication is also apparent in Figure 29 of the ’983 Patent, as to which the specification discloses that “mobile terminal B may be in a good communication situation with respect to its cellular network” and “mobile terminal B is preferably within a *short range* communication distance with the mobile terminal A” using communication techniques “including but not limited to WiFi, Bluetooth, UWB, RFID, Infrared communication, etc.” *Id.* at 37:30–41 (emphasis added).

Further, the specification discloses “Zigbee/Bluetooth,” which have shorter ranges than 3G cellular networks and which the parties agree have a range of greater than a few centimeters (*see* Dkt. #144, Ex. 22 at p. 1 of 2 (AMZ_VIS00012144) (“Range: 50–100 feet”); *see also id.*, Ex. 23 at p. 1 of 6 (AMZ_VIS00012150) (“Wireless range up to 70m indoors and 400m outdoors”)):

Each sensor 512 preferably has a unique ID. Multiple access mechanisms, such as TDMA, CDMA, FDMA, or other conventional approaches, may also be applied to allow the central receiver to communicate with multiple sensors at the same resource. It is believed that *Zigbee/Bluetooth* may be useful for many applications in light of the competing demands of working range, data rate and cost.

’983 Patent at 13:10–17 (emphasis added). This passage is followed by disclosure that provides an example of a type of facility in which a management system could be used:

In addition to assisting a caregiver with regard to an individual child’s diaper, a diaper management system may be configured to manage the diapers for groups of children, such as a pre-school class or a day care facility where many children may potentially wear diapers. An example of such a system 600 is shown in FIG. 6.

Id. at 13:47–51. This example of a “pre-school class or a day care facility” suggests that communication between a central receiver and multiple sensors would span more than, as Defendants have proposed, “a few centimeters.” At the August 28, 2019 hearing, Defendants

argued that this particular embodiment is not relevant to the claims at issue for the present disputed terms, but Defendants have failed to persuasively demonstrate why this is so.

This understanding is reinforced by dependent Claims 34 and 35 of the '983 Patent, which recite that the “wireless channel for the short range wireless communication” recited in above-reproduced Claim 22 “is a Zigbee channel” or “is a Bluetooth channel”:

34. The wireless HUB system of claim 33, wherein the wireless channel is a Zigbee channel.

35. The wireless HUB system of claim 33, wherein the wireless channel is a Bluetooth channel.

These claims depend from Claim 33, which depends from Claim 31, which in turn depends from Claim 22. The recital of “Bluetooth” in Claim 35 weighs against limiting the disputed term to Zigbee because the scope of a dependent claim is presumed to be within the scope of the claim from which it depends. *See, e.g., AK Steel Corp. v. Sollac & Ugine*, 344 F.3d 1234, 1242 (Fed. Cir. 2003). Further, Claim 34 weighs against limiting the disputed term to Zigbee because “the presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim.” *Phillips*, 415 F.3d at 1315.

At the August 28, 2019 hearing, Defendants argued that these dependent Claims 34 and 35 should be disregarded because these claims lack support in the specification. Defendants cited no authority for disregarding these claims. In general, “dependent claims cannot broaden an independent claim from which they depend.” *Enzo Biochem Inc. v. Applera Corp.*, 780 F.3d 1149, 1156–57 (Fed. Cir. 2015) (“[A]s claim 1 is limited to indirect detection by its own plain meaning, it would be inappropriate to use the doctrine of claim differentiation to broaden claim 1 to include a limitation imported from a dependent claim, such as direct detection.”). Here, as discussed above, neither the independent claims nor the specification defines or limits “short range” as

referring to NFC. Instead, using NFC is a specific feature of particular embodiments that should not be imported into the claims. *See Phillips*, 415 F.3d at 1323.

Plaintiff asserts that “[t]he correct construction of ‘short range wireless communication [channel]’ is one that utilizes non-licensed transmitter[s] having limited power output (as required by the FCC).” (Dkt. #119 at p. 19). Plaintiff fails to adequately support this proposed interpretation. Plaintiff cites no such explanation in the specification (*see id.* at pp. 16–19; *see also* Dkt. #144 at pp. 21–22), and the opinions of Plaintiff’s expert are unpersuasive. (*See* Dkt. #119, Ex. 7, May 23, 2019 McAlexander Decl. at ¶¶ 10–13). In short, Plaintiff fails to justify construing “short range wireless communication” in terms of utilizing “non-licensed” transmitters.

The Court therefore rejects Plaintiff’s proposed construction and Defendants’ proposed construction. Nonetheless, “some construction of the disputed claim language will assist the jury to understand the claims.” *TQP Dev., LLC v. Merrill Lynch & Co., Inc.*, No. 2:08-CV-471, 2012 WL 1940849, at *2 (E.D. Tex. May 29, 2012) (Bryson, J., sitting by designation). The Court therefore construes “short range wireless communication” to refer to the disclosed technologies, as set forth in the disclosure that “[v]arious technologies may be used for these components, including but not limited to . . . Zigbee, Bluetooth, or UWB technologies.” *See* ’983 Patent at 10:17–27. Because Zigbee, Bluetooth, and UWB are set forth as examples, the construction of the seemingly generic term “short range wireless communication” should encompass other communication protocols with range similar to Zigbee, Bluetooth, and UWB.²⁰ At the August 28, 2019 hearing, Plaintiff was amenable to such a construction.

²⁰ Although “similar” perhaps lacks absolute precision, “[t]he resolution of some line-drawing problems . . . is properly left to the trier of fact.” *Acumed LLC v. Stryker Corp.*, 483 F.3d 800, 806 (Fed. Cir. 2007) (“[A] sound claim construction need not always purge every shred of ambiguity.”) (citing *PPG Indus. v. Guardian Indus. Corp.*, 156 F.3d 1351, 1355 (Fed. Cir. 1998) (“after the court has defined the claim with whatever specificity and precision is warranted by the language

The Court therefore hereby construes **“short range wireless communication”** to mean **“communication using Zigbee, Bluetooth, UWB, or other similarly-ranged communication protocols.”**

J. “wherein the short range wireless communication is a Zigbee communication” and “wherein the wireless [transmission] channel is a Zigbee channel”

“wherein the short range wireless communication is a Zigbee communication” (’798 Patent, Claim 6; ’918 Patent, Claims 30, 113)	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“a short range wireless communication that is a Zigbee protocol communication”	Lacks written description under 35 U.S.C. § 112
“wherein the wireless [transmission] channel is a Zigbee channel” (’983 Patent, Claim 39)	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“a wireless [transmission] channel that is a channel for communicating ZigBee protocol messages”	Lacks written description under 35 U.S.C. § 112

(Dkt. #111, Ex. 1 at p. 4; Dkt. #119 at pp. 19–20; Dkt. #131 at p. 49; Dkt. #144 at p. 22; Dkt. #200, Ex. A at p. 3; *id.*, Ex. B at p. 5 of 6; *id.*, Ex. C at p. 3).

1. The Parties’ Positions

Plaintiff argues that “[b]ecause ZigBee has a well-known meaning in the art as referring to a category of communication protocols, this term is not indefinite.” (Dkt. #119 at p. 19).

of the claim and the evidence bearing on the proper construction, the task of determining whether the construed claim reads on the accused product is for the finder of fact”)); *see Eon Corp. IP Holdings LLC v. Silver Spring Networks, Inc.*, 815 F.3d 1314, 1318–19 (Fed. Cir. 2016) (citing *Acumed* and *PPG*).

Defendants respond that “Zigbee is mentioned only three times in the specification and for two different embodiments, neither of which provides adequate written description for the recently amended claims.” (Dkt. #131 at p. 49).

Plaintiff replies that “written description arguments are not proper claim construction arguments.” (Dkt. #144 at p. 22).

2. Analysis

Defendant argues that “the Court should hold that these claims lack written description under 35 U.S.C. § 112.” (Dkt. #131 at p. 50). In some cases, the extent to which the written description supports a proposed construction may be taken into account as part of a claim construction analysis. *See, e.g., Ruckus Wireless, Inc. v. Innovative Wireless Solutions, LLC*, 824 F.3d 999, 1004 (Fed. Cir. 2016) (“The canon favoring constructions that preserve claim validity therefore counsels against construing ‘communications path’ to include wireless communications.”).

Nonetheless, the Federal Circuit has “certainly not endorsed a regime in which validity analysis is a regular component of claim construction.” *See Phillips*, 415 F.3d at 1327. Indeed, “[w]hether a claim satisfies the written description requirement is a question of fact.” *See, e.g., Indivior Inc. v. Dr. Reddy’s Labs., S.A.*, 930 F.3d 1325, 1347 (Fed. Cir. 2019) (citing *Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc)). For purposes of the present Claim Construction Memorandum Opinion and Order, the Court hereby rejects Defendants’ invalidity argument. Defendants have not presented any proposed claim construction, and the Court finds that no construction is necessary.

The Court therefore hereby construes “**wherein the short range wireless communication is a Zigbee communication**” and “**wherein the wireless [transmission] channel is a Zigbee channel**” to have their **plain meaning**.

K. “merchant information”

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“purchase information”	Plain and ordinary meaning. No construction necessary.

(Dkt. #111, Ex. 1 at p. 1; Dkt. #119 at p. 9; Dkt. #131 at p. 50; Dkt. #200, Ex. A at p. 1). The parties submit that this term appears in Claim 110 of the ’983 Patent. (Dkt. #131 at p. 50; Dkt. #144 at p. 16; Dkt. #200, Ex. A at p. 1).

1. The Parties’ Positions

Plaintiff argues that “the specification teaches that merchants may provide purchase-related information, such as coupons or other purchase incentive information to users who may be interested in purchasing products sold by the merchants,” and “[t]he specification explains that the merchants may also be provided with, or already have, the relevant shipping information in connection with the purchase request.” (Dkt. #119 at p. 9).

Defendants respond that “[t]he ’983 patent describes ‘merchant information’ consistent with its plain meaning.” (Dkt. #131 at p. 50). Defendants also argue that Plaintiff’s proposed construction should be rejected because “[a]lthough ‘merchant information’ may include purchase information, it may also be other information, such as which merchants are ‘local,’ and advertisements from those local merchants.” (*Id.* at p. 51).

Plaintiff replies that “[e]ach example of ‘merchant information’ provided in the specification is information that is related to the purchase of items.” (Dkt. #144 at p. 16).

2. Analysis

The specification discusses information provided to and by a merchant, “[f]or example, a merchant provided with an indication of *local applicability* for certain content may wish to make *advertisements, coupons*, or the like available to the users in that domain.” ’983 Patent at 8:49–52 (emphasis added). Similarly, regarding an embodiment involving diaper condition updates, the specification discloses: “[T]he delivery of locally applicable Internet content may be provided in conjunction with the diaper update. Also, a *local merchant* (and corresponding server) 814 that sells diapers is able to *present a coupon or other incentive to the user* in conjunction with the determination that a diaper is wet by the DCSM 812.” *Id.* at 14:60–66 (emphasis added); *see id.* at 15:3–8 (“information provided by the local merchant”); *see also id.* at 15:39–44 (“Once the authorization is obtained, payment is sent 868 to the Local Merchant server 814 to complete the transaction, and the receipt, confirmation and other information may be fed back to the WHUB 804 regarding the same. For physical product like diapers, the WHUB will have provided (or the Local Merchant may already have) the shipping address.”); *id.* at 25:34–63 (“access to information related to the locally applicable Internet content, with commercial incentives such as coupons or advertisements being delivered to users”).

Plaintiff urges that “in the context of the patents-in-suit, ‘merchant information’ is information that may be provided to or by a merchant that is related to a purchase request” (Dkt. #119 at p. 9), but Claim 110 of the ’983 Patent recites that “the merchant information relevant to the replenishment of the inventory of the item is sent to a user of the item” (emphasis added):

110. A wireless device configured to facilitate electronic communications, the wireless device comprising:

a transmitter configured to transmit, through a wireless transmission channel, a signal in connection with an initiation of a replenishment of an inventory of an item, the signal being transmitted through the wireless transmission channel in response to an indication of an updated status of the item, the signal comprising

information corresponding to a unique identifier of the wireless device, information about the inventory of the item being stored in a database, a requirement of the item being included in the information about the inventory of the item;

wherein the information corresponding to the unique identifier is recognized in connection with a successful transmission of the signal;

wherein shipping information is communicated through a network communication channel to accommodate the replenishment of the inventory;

wherein the wireless transmission channel established for transmission of the signal is separate from the network communication channel; wherein the item is associated with the wireless device; wherein the wireless device is designated to transmit the signal; and wherein *the merchant information relevant to the replenishment of the inventory of the item is sent to a user of the item.*

Based on this context provided by surrounding claim language, “merchant information” is not necessarily information provided to or by a merchant but rather can be information *about* a merchant. The specification is consistent with this understanding, referring to “merchant information” that might be “cached” prior to an inventory running low:

Based upon historical activity relating to access of locally applicable Internet content, as well as whatever merchant participation is desired in conjunction with the system 800, *the local merchant’s information is cached* 852 at the relevant LCN Server(s). A wet diaper is detected 854 by the DCSM 812 and this information is transmitted to the WHUB 804. The WHUB 804, managing the diaper inventory for the household, determines that the inventory of diapers is low, and thus sends 856 a *purchase alert* through the Base Station 808 requesting information related to the current need. *In response* to this, the LCN Server(s) 810 *determine that the local merchant information is relevant to the current need*, and thus retrieve 858 and send 860 *the cached local merchant information* to the WHUB 804.

’983 Patent at 15:10–23 (emphasis added).

In sum, Plaintiff fails to support its arguments that “merchant information” must be information provided to or by a merchant or must be related to purchases.

The Court therefore hereby construes “**merchant information**” to mean “**information about a merchant.**”

L. “a requirement of the item”

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“a required characteristic of the item”	Plain and ordinary meaning. No construction necessary.

(Dkt. #111, Ex. 1 at p. 1; Dkt. #119 at p. 9; *see* Dkt. #200, Ex. A at p. 1; *id.*, Ex. D at p. 1). The parties submit that this term appears in Claim 110 of the ’983 Patent and Claims 1 and 29 of the ’443 Patent. (Dkt. #131 at p. 51; Dkt. #144 at p. 17; *see* Dkt. #111, Ex. 1 at p. 1; *see also* Dkt. #200, Ex. A at p. 1; *id.*, Ex. D at p. 1).

1. The Parties’ Positions

Plaintiff argues that “[t]he surrounding language of claim 110 makes clear that this claim term is directed to inventory replenishment of an item.” (Dkt. #119 at p. 9).

Defendants respond that Plaintiff’s proposed construction should be rejected because “[c]hanging the term ‘requirement’ to ‘required characteristic’ only creates ambiguity and suggests that the claim term potentially excludes requirements relating to quantity.” (Dkt. #131 at p. 52).

Plaintiff replies that “the ‘requirement of the item’ recited in the claim is a reference to a required characteristic of the item being replenished, such as the item brand, or the size or quantity of the item being replenished.” (Dkt. #144 at p. 17).

2. Analysis

Claim 110 of the ’983 Patent refers to “a requirement of the item being included in the information about the inventory of the item.” Defendants urge that Plaintiff’s proposal of “required characteristic” “suggests that the claim term potentially excludes requirements relating to quantity.” (Dkt. #131 at p. 52). Plaintiff replies that its proposal of “required characteristic” can refer to a quantity of the item being replenished. (Dkt. #144 at p. 17; *see* Dkt. #119 at pp. 9–10).

Plaintiff cites disclosure regarding keeping track of diaper inventory and replenishing when appropriate:

For example, the WHUB 804 may *monitor the number of diapers detected as being used*. When the amount of used diapers is close to the amount known to have been purchased previously, an additional alert may be presented to the user so that they are aware that they need diapers and they can get the discount if they buy brand x based upon the information provided by the local merchant.

The process for providing such functionality may be as follows. Based upon historical activity relating to access of locally applicable Internet content, as well as whatever merchant participation is desired in conjunction with the system 800, the local merchant's information is cached 852 at the relevant LCN Server(s). A wet diaper is detected 854 by the DCSM 812 and this information is transmitted to the WHUB 804. The WHUB 804, *managing the diaper inventory for the household, determines that the inventory of diapers is low, and thus sends 856 a purchase alert* through the Base Station 808 requesting information related to the current need. In response to this, the LCN Server(s) 810 determine that the local merchant information is relevant to the current need, and thus retrieve 858 and send 860 the cached local merchant information to the WHUB 804.

In conjunction with the above exchange of information, alerts of both the diaper condition and the low diaper inventory may be provided and retained for user review. When the user is ready to make a purchase, this may be accommodated via the WHUB 804.

'983 Patent at 15:2–28 (emphasis added).

Introducing the word “characteristic,” however, would not be readily understood by a finder of fact as referring to quantity. Plaintiff’s proposed construction would therefore tend to confuse rather than clarify the scope of the claims. Introducing this potential confusion into the claims is unwarranted, particularly in light of the substantial agreement between the parties that the word “requirement” can refer to quantity. (*See* Dkt. #119 at pp. 9–10; *see also* Dkt. #131 at p. 52; Dkt. #144 at p. 17). The Court therefore hereby expressly rejects Plaintiff’s proposed construction. No further construction is necessary. *See O2 Micro*, 521 F.3d at 1362 (“[D]istrict courts are not (and should not be) required to construe every limitation present in a patent’s asserted claims.”); *see also Finjan, Inc. v. Secure Computing Corp.*, 626 F.3d 1197, 1207 (Fed.

Cir. 2010) (“Unlike *O2 Micro*, where the court failed to resolve the parties’ quarrel, the district court rejected Defendants’ construction.”); *Summit 6, LLC v. Samsung Elecs. Co., Ltd.*, 802 F.3d 1283, 1291 (Fed. Cir. 2015).

The Court accordingly hereby construes **“a requirement of the item”** to have its **plain meaning**.

M. “an input interface configured to receive a wireless signal through a wireless communication network” and “a network interface configured to provide a communication through a network communication channel”

<p align="center">“an input interface configured to receive a wireless signal through a wireless communication network” (’983 Patent, Claims 22, 62)</p>	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>Innovation understands that the only issue with respect to this claim term is defendants’ contention that it is governed by pre-AIA § 112, para. 6. Thus, Innovation’s contention is limited to that issue.</p> <p>Innovation contends that this claim term recites sufficiently definite structure to one of ordinary skill in the art. Alternatively, if this term is governed by pre-AIA § 112, para. 6, the corresponding structure(s), act(s), or material(s): input connection/circuitry to a module (e.g., mobile terminal interface module 1002 or interface/buffer module 1102), wireless and/or network interface (see CRC), network interface card (see MC System), or transmitter and/or receiver (see MC System). The claimed function is: receive a wireless signal through a wireless communication network.</p>	<p>Governed by pre-AIA § 112, para. 6.</p> <p>Function: “receive a wireless signal through a wireless communication network”</p> <p>Structure: Indefinite under pre-AIA § 112 for failure to disclose corresponding structure</p>

<p align="center">“a network interface configured to provide a communication through a network communication channel” (’983 Patent, Claims 22, 62, 117, 128)</p>	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>Innovation understands that the only issue with respect to this claim term is defendants’ contention that it is governed by pre-AIA § 112, para. 6. Thus, Innovation’s contention is limited to that issue.</p> <p>Innovation contends that this claim term recites sufficiently definite structure to one of ordinary skill in the art. Alternatively, if this term is governed by pre-AIA § 112, para. 6, the corresponding structure(s), act(s), or material(s): wireless and/or network interface for CRC 520. The claimed function is: provide a communication through a network communication channel.</p>	<p>Governed by pre-AIA § 112, para. 6.</p> <p>Function: “provide a communication through a network communication channel”</p> <p>Structure: Indefinite under pre-AIA § 112 for failure to disclose corresponding structure</p>

(Dkt. #111, Ex. 1 at pp. 7–9). The parties submit that these terms appear in Claims 22, 62, 117, and 128 of the ’983 Patent. (*Id.*; see Dkt. #119 at p. 26).

Plaintiff argues that “[t]he claimed ‘input interface’ and ‘network interface’ are part of well-known classes of structures.” (Dkt. #119 at p. 26).

Defendants respond that “Amazon and HTC no longer seek construction of the ‘input interface’ and ‘network interface’ ‘configured to’ claim terms.” (Dkt. #131 at p. 37 n.12).

Plaintiff replies that Defendants did not brief these terms and therefore the Court should not apply 35 U.S.C. § 112, ¶ 6. (Dkt. #144 at p. 16).

These terms are no longer being presented for construction, so the Court does not further address these terms.

N. “wherein the mobile terminal is configured to transmit the encoded signal to the destination device through a predetermined communication channel in conjunction with a navigational command for the predetermined communication channel”

The parties disputed whether this term is governed by 35 U.S.C. § 112, ¶ 6. (Dkt. #111, Ex. 1 at pp. 36–37; *see* Dkt. #200, Ex. F at pp. 9–10). The parties submitted that this term appears in Claim 9 of the ’918 Patent. (*Id.*)

Plaintiff submits: “Although Defendants identified this as a claim term for construction, this claim term does not actually exist. In the Certificate of Correction for the ’918 patent, the words ‘mobile terminal’ were replaced with ‘wireless signal conversion apparatus.’ ’918 patent, Certificate of Correction. Thus, this non-existent term should not be construed by the Court.” (Dkt. #119 at p. 31).

Defendants’ response brief acknowledges the correction. (*See* Dkt. #131 at p. 31 n.11; *see also* Dkt. #119, Ex. 2, Oct. 24, 2017 Certificate of Correction (p. 71 of 71 of Ex. 2)).

Because this term no longer exists, the Court does not further address this term.

O. Additional Terms

“Defendants no longer seek a construction that the **preambles of all asserted claims** are limiting.” (Dkt. #131 at p. 52 n.21) (emphasis added). The Court therefore does not address the preambles of the asserted claims except as otherwise specifically addressed in the present Claim Construction Memorandum Opinion and Order.

Defendants previously asserted indefiniteness as to the term “particular information content” in claims of the ’918 Patent. (Dkt. #111, Ex. 1 at p. 3). Defendants’ response brief does not address this term. (*See* Dkt. #145.) To whatever extent Defendants maintain their assertion of indefiniteness, the Court hereby rejects Defendants’ assertion of indefiniteness as unsupported, and the Court hereby construes “**particular information content**” to have its **plain meaning**.

CONCLUSION

The Court adopts the constructions set forth in this opinion for the disputed terms of the patents-in-suit. The parties are ordered that they may not refer, directly or indirectly, to each other's claim construction positions in the presence of the jury. Likewise, the parties are ordered to refrain from mentioning any portion of this opinion, other than the actual definitions adopted by the Court, in the presence of the jury. Any reference to claim construction proceedings is limited to informing the jury of the definitions adopted by the Court.

SIGNED this 9th day of September, 2019.


AMOS L. MAZZANT
UNITED STATES DISTRICT JUDGE